

Exhibit

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Folder 1

Pt 1

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4949-A Cox Road, Glen Allen, VA 23060-6296

804/527-5020

SUBJECT: MODIFICATION OF VPDES PERMIT NO. VA0003867, Omega Protein, Inc., Reedville, VA.

TO: James J. Golden, Regional Permit Manager
Piedmont Regional Office

FROM: Denise M. Mosca, Permit Writer via J.R. Bell, Water Permit Manager

DATE: February 24, 2000

COPIES: PRO-KO, OWPS, EPA—Region III, VDH-ECEEFO

Legal Name, Address: Omega Protein, Inc.
P.O. Box 175
Reedville, Virginia 22539

Modification Requested by: Mr. Steve Jones
General Manager, Omega Protein

Application Received: February 10, 1998
Application Complete: October 14, 1999
Fee paid: March 12, 1998

Type of Discharge: Existing Industrial Discharge.

Manufacturing Operation: This facility processes menhaden by cooking the fish, pressing and
(SIC Code 2077) separating the oil and solids, and evaporating water to leave fish meal and oil. Wastewaters include contact and non-contact cooling waters, the evaporation condensate (barged to the Chesapeake Bay) and the treated evaporation condensate from the lagoon.

Receiving Stream: Stream: Cockrell's Creek and Chesapeake Bay
Basin: Ches. Bay/Atl./Sm. Coastal
Subbasin: NA
Section: 2 Class: II
Special Standard: a, NEW-20

Modification Description: The applicant proposes to modify the original permit to combine the wasteload allocations from Zapata Protein, Inc. VA0003867 and Zapata – Fairport VA0003204 (formerly Ampro Fisheries, Inc.) under Omega Protein, Inc., the remaining menhaden fishery in Cockrell's Creek. An 005 outfall is proposed in order to accommodate new, more efficient equipment for the evaporation process. An 006 outfall is proposed, which does not include any new flow, but to combine flows from the present 001, 004 and 005 (the cooling water outfalls) in order to provide additional treatment to meet final limits for ammonia and cyanide.

Public Notice:

The modification has received public notice in accordance with the Permit Regulation and no comments were received.

Planning:

The discharge has not been addressed in any planning document but will be included when the plan is updated.

EPA Comments:

EPA has no objections to the adequacy of the draft permit.

VDH Comments:

The VDH has no objections to the draft permit, as stated by their letter dated October 12, 1999.

Previous Board Action:

Omega Protein is currently under consent order for an unpermitted discharge. They have fulfilled all the requirements of the consent order and it is scheduled to be cancelled at the next Board meeting.

Staff Comments:

The modification was requested after the purchase of Ampro Fisheries, Inc. by Zapata in order for them to access the wasteload allocation to Cockrell's Creek of both companies. Ampro Fisheries was located directly across the creek from Zapata. New outfall arrangements are planned to allow for improved treatment.

The modification exceeded 120 days to process. Processing delays were encountered during this permit action due to the difficulty of modelling Cockrell's Creek and analyzing the mixing available for the barge disposal of condensate to Chesapeake Bay. Additional delays were experienced in fine-tuning the calculation approach for proportioning the wasteload allocation among the outfalls (necessitating a second review by EPA, and finalizing details with Omega concerning their plans to provide additional treatment.

This permit was issued on January 24, 1975, reissued on January 24, 1980, modified on July 12, 1983, reissued on May 16, 1985, November 2, 1992 and December 17, 1997. It will expire on December 17, 2002.

The staff believes that the attached effluent limitations will maintain the Water Quality Standards adopted by the Board.

Licensed Operator
Requirements:

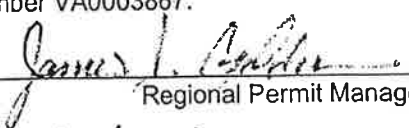
The staff believe that a Class III operator is required.

Staff Recommendations:

The staff recommends that the following be approved for the Director:

- (1) Approve the modification of VPDES Permit Number VA0003867.
- (2) Issue the modified VPDES Permit Number VA0003867.

Approved: _____


Regional Permit Manager

Date: _____

3/15/00



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit No. VA0003867
Effective Date: December 17, 1997
Modification Date: March 17, 2000
Expiration Date: December 17, 2002

AUTHORIZATION TO DISCHARGE UNDER THE
VIRGINIA POLLUTANT DISCHARGE ELIMINATION SYSTEM
AND
THE VIRGINIA STATE WATER CONTROL LAW

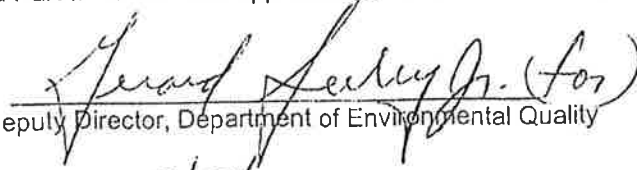
In compliance with the provisions of the Clean Water Act as amended and pursuant to the State Water Control Law and regulations adopted pursuant thereto, the following owner is authorized to discharge in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in this permit.

OWNER: Omega Protein, Inc.
FACILITY NAME: Omega Protein, Inc.
CITY: Reedville
COUNTY: Northumberland
FACILITY LOCATION: End of VSH 659, Reedville, Va. 22539

The owner is authorized to discharge to the following receiving stream:

STREAM: Cockrell Creek and Chesapeake Bay
RIVER BASIN: Ches Bay/Atl/Srn Coastal
RIVER SUBBASIN: N/A
SECTION: 2
CLASS: II
SPECIAL STANDARDS: a, NEW-20

The authorized discharge shall be in accordance with this cover page, Part I - Effluent Limitations and Monitoring Requirements and Part II - Conditions Applicable to All VPDES Permits, as set forth herein.


Deputy Director, Department of Environmental Quality

3/17/00

Date

Omega Protein, Inc.

PART I
CONTACT COOLING WATER

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the permit's effective date and lasting until the permit's expiration date or the issuance of the CTO for outfall 006, the permittee is authorized to discharge from outfall number 001.

Such discharges shall be limited and monitored at outfall 001 by the permittee as specified below:

| EFFLUENT CHARACTERISTICS | DISCHARGE LIMITATIONS | | | | | | MONITORING REQUIREMENTS | |
|---------------------------------|-----------------------|----------|----------------|---------|-----------|---------|-------------------------|-------------------------|
| | MONTHLY AVERAGE | | WEEKLY AVERAGE | MINIMUM | MAXIMUM | | FREQUENCY | SAMPLE TYPE |
| Flow (MGD) | NL | | NA | NA | NL | | Cont. | Estimate |
| BOD | 1755 Kg/d | | NA | NA | 3142 Kg/d | | 3/Week | 24-HC |
| Total Suspended Solids (TSS) | 355 Kg/d | | NA | NA | 1609 Kg/d | | 3/Week | 24-HC |
| Oil & Grease | 372 Kg/d | | NA | NA | 685 Kg/d | | 3/Week | Grab |
| pH (Standard Units) | NA | | NA | 6.0 | 9.0 | | 3/Week | Grab |
| Total Phosphorus | 57.35 Kg/d | 2.0 Mg/l | NA | NA | NL | NL | 2/Month | 24-HC |
| Total Nitrogen | NL Kg/d | NL Mg/l | NA | NA | NL Kg/d | NL Mg/l | 2/Month | 24-HC |
| Ammonia-Nitrogen ^{3,4} | 1.38 Mg/l | | NA | NA | 2.1 Mg/l | | 2/Month | 24-HC |
| Cyanide ^{3,4} | 1.54 µg/l | | NA | NA | 2.00 µg/l | | 2/Month | Grab |
| Temperature (°C) | NA | | NA | NA | 50 | | 1/Day | Immersion Stabilization |

NL = No Limitation, monitoring only
NA = Not Applicable

3. The Quantification Level Goal for Ammonia-Nitrogen shall be 0.2 mg/l or lower; the Quantification Level Goal for Cyanide shall be 10 μ g/l or lower. See Part I.B.1 and I.B.15. for compliance requirements.
4. Schedule of Compliance applies for Ammonia-Nitrogen and Cyanide limits: Also see Part I.B.13.

Omega Protein, Inc.

PART I
AERATED LAGOONS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

5. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall number 002.

Such discharges shall be limited and monitored at outfall 002 by the permittee as specified below:

| EFFLUENT CHARACTERISTICS | DISCHARGE LIMITATIONS | | | | MONITORING REQUIREMENTS | |
|-------------------------------|-----------------------|----------------|---------|-----------|-------------------------|-------------------------|
| | MONTHLY AVERAGE | WEEKLY AVERAGE | MINIMUM | MAXIMUM | FREQUENCY | SAMPLE TYPE |
| Flow (MGD) | NL | NA | NA | NL | Cont. | Measured |
| Temperature (°C) | NL | NA | NA | NL | 1/Day | Immersion Stabilization |
| BOD ₅ (Kg/d) | 468 Kg/d | NA | NA | 837 Kg/d | 2/Month | 24-HC |
| Total Suspended Solids (Kg/d) | 171 Kg/d | NA | NA | 422 Kg/d | 2/Month | 24-HC |
| Oil and Grease | 27.6 Kg/d | NA | NA | 50.9 Kg/d | 2/Month | Grab |
| Ammonia ^{7,8} | 33.0 Mg/l | NA | NA | 45.3 Mg/l | 2/Month | 24-HC |
| pH (Standard Units) | NA | NA | 6.0 | 9.0 | 2/Week | Grab |

NL = No Limitation, monitoring only

NA = Not Applicable

6. There shall be no discharge of floating solids or visible foam in other than trace amounts.
7. The Quantification Level Goal for Ammonia-Nitrogen shall be 0.2 mg/l or lower. See Part I.B.1 and I.B.15. for compliance requirements.
8. Schedule of Compliance applies for Ammonia-Nitrogen limits: Also see Part I.B.13.

9. Whole Effluent Toxicity Effluent Limitation and Monitoring Requirements (Acute WET Limit)

- a. The Whole Effluent Toxicity limit for outfall 002 shall be a minimum No Observed Adverse Effect Concentration (NOAEC) of 100% effluent. This is a final limit with an effective date of January 15, 1998.
- b. Commencing with the effective date established in a. above, the permittee shall conduct quarterly acute toxicity tests using 24 hour flow-proportioned composite samples of final effluent from outfall 002. The quarters shall be defined by the seasonal operation of the facility: First Quarter: May-July; Second Quarter: August-October; Third Quarter: November-January; Fourth Quarter: February-April. The acute toxicity tests shall be 48-hour static tests using Mysidopsis bahia, and shall be conducted using a minimum of 20 test organisms per exposure and a minimum of 4 replicates of a suitable control and 100% effluent. The No Observed Adverse Effect Concentration shall be reported on the DMR for the month following the quarter in which the test is performed. Report either 100% or less than 100%. Two copies of a detailed report concerning the conduct of the test shall accompany the results. Technical assistance in developing the procedures for these tests shall be provided by the Department of Environmental Quality, if requested by the permittee. Test protocols shall be submitted for approval no later than two months before the effective date of the limit.
- c. The No Observed Adverse Effect Concentration (NOAEC) for acute toxicity shall be 100% effluent. The effluent will comply with the WET limit if the survival of test organisms in both the control and 100% effluent exposures equals or exceeds 90%. If survival in the effluent is less than 90% and this value is significantly different from the control survival, as determined by hypothesis testing, the NOAEC is less than 100% and the effluent is not in compliance with the WET limit. Tests in which control survival is less than 90% are not acceptable.
- d. In the event that quarterly WET testing as in b. above is not possible due to lack of operations at the facility, the permittee shall notify the Department of Environmental Quality's Kilmarnock Regional Office with the DMR submitted for the month following the quarter in which the test was to have been performed.
- e. This permit may be modified or revoked and reissued to include pollutant specific limits in lieu of a WET limit should it be demonstrated that toxicity is due to specific parameters. The pollutant specific limits must control the toxicity of the effluent.

PART I
EVAPORATOR CONDENSATE

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

10. During the period beginning with the permit's effective date and lasting until the permit's expiration date, the permittee is authorized to discharge from outfall number 003.

Such discharges shall be limited and monitored at outfall 003 by the permittee as specified below and in Special Condition No. 2 (Page 9 of 25):

| EFFLUENT CHARACTERISTICS | DISCHARGE LIMITATIONS | | | | MONITORING REQUIREMENTS | |
|---------------------------------|-----------------------|----------------|---------|-----------|-------------------------|-------------------------|
| | MONTHLY AVERAGE | WEEKLY AVERAGE | MINIMUM | MAXIMUM | FREQUENCY | SAMPLE TYPE |
| Flow (MGD) | NL | NA | NA | NL | Cont. | Est. |
| BOD ₅ | 4296 Kg/d | NA | NA | 7710 Kg/d | 2/Month | 24-HC |
| Total Suspended Solids (TSS) | 114 Kg/d | NA | NA | 282 Kg/d | 2/Month | 24-HC |
| Oil & Grease | 426 Kg/d | NA | NA | 784 Kg/d | 2/Month | Grab |
| pH (Standard Units) | NA | NA | 6.0 | 9.0 | 2/Month | Grab |
| Ammonia ^{12,13} (mg/l) | 39.6 Mg/l | NA | NA | 49.0 Mg/l | 2/Month | 24-HC |
| Dissolved Oxygen (mg/l) | NL | NA | NL | NA | 1/Day | Grab |
| Temperature (°C) | NL | NA | NA | NL | 1/Day | Immersion Stabilization |

NL = No Limitation, monitoring only
NA = Not Applicable

11. There shall be no discharge of floating solids or visible foam in other than trace amounts.
12. The Quantification Level Goal for Ammonia-Nitrogen shall be 0.2 mg/l or lower. See Part I.B.1 and I.B.15. for compliance requirements.
13. Schedule of Compliance applies for Ammonia-Nitrogen limit: Also see Part I. B. 13.

Omega Protein, Inc.

PART I

NON-CONTACT COOLING WATER

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

14. During the period beginning with the permit's effective date and lasting until the permit's expiration date or the issuance of the CTO for outfall 006, the permittee is authorized to discharge from outfall number 004 and 005.

Such discharges shall be limited and monitored at each outfall as specified below:

| EFFLUENT CHARACTERISTICS | DISCHARGE LIMITATIONS | | | | | | MONITORING REQUIREMENTS | |
|--------------------------|-----------------------|----------|----------------|---------|---------|---------|-------------------------|-------------------------|
| | MONTHLY AVERAGE | | WEEKLY AVERAGE | MINIMUM | MAXIMUM | | FREQUENCY | SAMPLE TYPE |
| Flow (MGD) | NL | | NA | NA | NL | | Cont. | Estimate |
| Temperature (°C) | NL | | NA | NA | 45 | | 1/Day | Immersion Stabilization |
| Total Phosphorus | 93.9 Kg/d | 2.0 Mg/l | NA | NA | NL Kg/d | NL Mg/l | 1/Quarter | 24-HC |
| Total Nitrogen | NL Kg/d | NL Mg/l | NA | NA | NL Kg/d | NL Mg/l | 1/Quarter | 24-HC |
| Ammonia Nitrogen | NL Mg/l | | NA | NA | NL Mg/l | | 2/Month | 24-HC |
| pH (Standard Units) | NA | | NA | 6.0 | 9.0 | | 5/Week | Grab |

NL = No Limitation, monitoring only

NA = Not Applicable

15. There shall be no discharge of floating solids or visible foam in other than trace amounts.

Omega Protein, Inc.

PART I
COMBINED CONTACT and NON-CONTACT COOLING WATERS

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

16. During the period beginning with the issuance of the Certificate to Operate (CTO) for the combined contact and non-contact cooling waters outfall and lasting until the permit's expiration date, the permittee is authorized to discharge from combined outfall number 006.

Such discharges shall be limited and monitored at outfall 006 by the permittee as specified below:

| EFFLUENT CHARACTERISTICS | DISCHARGE LIMITATIONS | | | | | | MONITORING REQUIREMENTS | |
|-----------------------------------|-----------------------|----------|----------------|---------|-----------|---------|-------------------------|-------------------------|
| | MONTHLY AVERAGE | | WEEKLY AVERAGE | MINIMUM | MAXIMUM | | FREQUENCY | SAMPLE TYPE |
| Flow (MGD) | NL | | NA | NA | NL | | Cont. | Estimate |
| BOD ₅ | 1755 Kg/d | | NA | NA | 3142 Kg/d | | 3/Week | 24-HC |
| Total Suspended Solids (TSS) | 655 Kg/d | | NA | NA | 1609 Kg/d | | 3/Week | 24-HC |
| Oil & Grease | 372 Kg/d | | NA | NA | 685 Kg/d | | 3/Week | Grab |
| pH (Standard Units) | NA | | NA | 6.0 | 9.0 | | 3/Week | Grab |
| Total Phosphorus | 178.4 Kg/d | 2.0 Mg/l | NA | NA | NL | NL | 2/Month | 24-HC |
| Total Nitrogen | NL Kg/d | NL Mg/l | NA | NA | NL Kg/d | NL Mg/l | 2/Month | 24-HC |
| Ammonia-Nitrogen ^{18,19} | 1.68 Mg/l | | NA | NA | 2.1 Mg/l | | 2/Month | 24-HC |
| Cyanide ^{16,19} | 1.54 µg/l | | NA | NA | 2.00 µg/l | | 2/Month | Grab |
| Temperature (°C) | NL | | NA | NA | 45 | | 1/Day | Immersion Stabilization |

NL = No Limitation, monitoring only

NA = Not Applicable

17. There shall be no discharge of floating solids or visible foam in other than trace amounts.

18. The Quantification Level Goal for Ammonia-Nitrogen shall be 0.2 mg/l or lower; the Quantification Level Goal for Cyanide shall be 10 μ g/l or lower. See Part I.B.1 and I.B.15. for compliance requirements.
19. Schedule of Compliance applies for Ammonia-Nitrogen and Cyanide limits: Also see Part I.B.13.

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Industrial Major 12/28/1999

PERMITTEE NAME/ADDRESS (INCLUDE
FACILITY NAME/LOCATION IF DIFFERENT)

NAME Omega Protein, Inc.
ADDRESS P. O. Box 175
Reedville VA 22539

FACILITY Omega Protein

| | | | | | |
|-------------------|----|-----|---------------------|----|-----|
| VA0003867 | | | 001 | | |
| PERMIT NUMBER | | | DISCHARGE NUMBER | | |
| MONITORING PERIOD | | | | | |
| YEAR | MO | DAY | YEAR | MO | DAY |
| | | | | | |
| FROM | | | TO | | |

DEPT. OF ENVIRONMENTAL QUALITY
(REGIONAL OFFICE)

Kilmarnock Regional Office
P.O. Box 669
429 East Church Street
Kilmarnock VA 22482
(804) 435-3181

**NOTE: READ PERMIT AND GENERAL INSTRUCTIONS
BEFORE COMPLETING THIS FORM.**

| PARAMETER | | QUANTITY OR LOADING | | | QUALITY OR CONCENTRATION | | | | NO. EX. | FREQUENCY OF ANALYSIS | SAMPLE TYPE |
|-------------------------|-----------------------|---------------------|---------|-------|--------------------------|---------|---------|-------|------------|-----------------------------|----------------|
| | | AVERAGE | MAXIMUM | UNITS | MINIMUM | AVERAGE | MAXIMUM | UNITS | | | |
| 001 FLOW | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | NL | NL | MGD | ***** | ***** | ***** | | | CONT | EST |
| 002 PH | REPORTED | ***** | ***** | | | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | 6. | ***** | 9.0 | SU | | 3D/W | GRAB |
| 003 BOD5 | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 1755 | 3142 | KG/D | ***** | ***** | ***** | | | 3D/W | 24HC |
| 004 TOTAL SUS.SOLIDS | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 655 | 1609 | KG/D | ***** | ***** | ***** | | | 3D/W | 24HC |
| 012 TOTAL PHOSPHORUS | REPORTED | | | | ***** | | | | | | |
| | PERMIT REQUIREMENT | 37.85 | NL | KG/D | ***** | 2. | NL | MG/L | | 2/M | 24HC |
| 013 TOTAL NITROGEN | REPORTED | | | | ***** | | | | | | |
| | PERMIT REQUIREMENT | NL | NL | KG/D | ***** | NL | NL | MG/L | | 2/M | 24HC |
| 080 TEMPERATURE | REPORTED | ***** | ***** | | ***** | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | ***** | ***** | 50. | C | | 1/DAY | IS |
| 500 OIL & GREASE | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 372 | 685 | KG/D | ***** | ***** | ***** | | | 3D/W | GRAB |

ADDITIONAL PERMIT REQUIREMENTS OR COMMENTS

| BYPASSES AND OVERFLOWS | TOTAL OCCURRENCES | TOTAL FLOW (M. G.) | TOTAL BOD5 (K. G.) | OPERATOR IN RESPONSIBLE CHARGE | | | DATE | | | |
|--|----------------------|-----------------------|-----------------------|---|--|-----------|-----------------|--------|------|-----|
| | | | | | | | | | | |
| <small>I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS TO THE BEST OF MY KNOWLEDGE AND BELIEF TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS. SEE 18 U.S.C. & 1001 AND 33 U.S.C. & 1319. (Penalties under these statutes may include fines up to \$10,000 and/or maximum imprisonment of between 6 months and 5 years.)</small> | | | | TYPED OR PRINTED NAME | | SIGNATURE | CERTIFICATE NO. | YEAR | MO. | DAY |
| | | | | PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT | | | TELEPHONE | | | |
| | | | | | | | | | | |
| | | | | TYPED OR PRINTED NAME | | SIGNATURE | AREA CODE | NUMBER | YEAR | MO. |

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Industrial Major 12/28/1999

PERMITTEE NAME/ADDRESS (INCLUDE
FACILITY NAME/LOCATION IF DIFFERENT)

NAME Omega Protein, Inc.
ADDRESS P. O. Box 175
Reedville VA 22539

FACILITY Omega Protein

| | | | |
|-------------------|----|------------------|----------------|
| VA0003867 | | 002 | |
| PERMIT NUMBER | | DISCHARGE NUMBER | |
| MONITORING PERIOD | | | |
| YEAR | MO | DAY | TO YEAR MO DAY |
| | | | |

DEPT. OF ENVIRONMENTAL QUALITY
(RREGIONAL OFFICE)

Kilmarnock Regional Office
P.O Box 669
429 East Church Street
Kilmarnock VA 22482
(804) 435-3181

NOTE: READ PERMIT AND GENERAL INSTRUCTIONS
BEFORE COMPLETING THIS FORM.

| PARAMETER | | QUANTITY OR LOADING | | | QUALITY OR CONCENTRATION | | | | NO. EX. | FREQUENCY OF ANALYSIS | SAMPLE TYPE |
|---------------------------|--------------------|---------------------|---------|-------|--------------------------|---------|---------|-------|---------|-----------------------|-------------|
| | | AVERAGE | MAXIMUM | UNITS | MINIMUM | AVERAGE | MAXIMUM | UNITS | | | |
| 001 FLOW | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | NL | NL | MGD | ***** | ***** | ***** | | | CONT | MEAS |
| 002 PH | REPORTED | ***** | ***** | | | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | 6. | ***** | 9.0 | SU | | 2D/W | GRAB |
| 003 BOD5 | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 468 | 837 | KG/D | ***** | ***** | ***** | | | 2/M | 24HC |
| 004 TOTAL SUS. SOLIDS | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 171 | 422 | KG/D | ***** | ***** | ***** | | | 2/M | 24HC |
| 050 TEMPERATURE | REPORTED | ***** | ***** | | ***** | | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | ***** | NL | NL | C | | 1/DAY | IS |
| 379 TOXICITY FINAL, ACUTE | REPORTED | ***** | ***** | | | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | 100% BFN | ***** | ***** | % | | 1/3M | 24HC |
| 500 OIL & GREASE | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 27.6 | 50.9 | KG/D | ***** | ***** | ***** | | | 2/M | GRAB |
| | REPORTED | | | | | | | | | | |
| | PERMIT REQUIREMENT | | | | | | | | | | |

ADDITIONAL PERMIT REQUIREMENTS OR COMMENTS

| BYPASSES AND OVERFLOWS | TOTAL OCCURRENCES | TOTAL FLOW (M. G.) | TOTAL BOD5 (K. G.) | OPERATOR IN RESPONSIBLE CHARGE | | | DATE | | | |
|--|-------------------|--------------------|--------------------|---|-----------|-----------------|--------|------|-----|-----|
| <small>I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS TO THE BEST OF MY KNOWLEDGE AND BELIEF TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS. SEE 15 U.S.C. & 1601 AND 33 U.S.C. & 1319. (Penalties under these statutes may include fines up to \$10,000 and/or maximum imprisonment of between 6 months and 5 years.)</small> | | | | TYPED OR PRINTED NAME | SIGNATURE | CERTIFICATE NO. | YEAR | MO. | DAY | |
| | | | | PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT | | TELEPHONE | | | | |
| | | | | TYPED OR PRINTED NAME | SIGNATURE | AREA CODE | NUMBER | YEAR | MO. | DAY |
| | | | | | | | | | | |

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Industrial Major 12/28/1999

PERMITTEE NAME/ADDRESS (INCLUDE
FACILITY NAME/LOCATION IF DIFFERENT)

NAME Omega Protein, Inc.
ADDRESS P. O. Box 175
Reedville, VA 22539

FACILITY Omega Protein

| | |
|---------------|---------------------|
| VZ0003867 | 003 |
| PERMIT NUMBER | DISCHARGE NUMBER |

| MONITORING PERIOD | | | | | |
|-------------------|----|-----|------|----|-----|
| YEAR | MO | DAY | YEAR | MO | DAY |
| | | | | | |

FROM

TO

DEPT. OF ENVIRONMENTAL QUALITY
(REGIONAL OFFICE)

Kilmarnock Regional Office
P.O. Box 669
429 East Church Street
Kilmarnock, VA 22482
(804) 435-3181

NOTE: READ PERMIT AND GENERAL INSTRUCTIONS
BEFORE COMPLETING THIS FORM.

| PARAMETER | | QUANTITY OR LOADING | | | QUALITY OR CONCENTRATION | | | | NO. EX. | FREQUENCY OF ANALYSIS | SAMPLE TYPE |
|--------------------------|-----------------------|---------------------|---------|-------|--------------------------|---------|---------|-------|------------|-----------------------------|----------------|
| | | AVERAGE | MAXIMUM | UNITS | MINIMUM | AVERAGE | MAXIMUM | UNITS | | | |
| 001 FLOW | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | NL | NL | MGD | ***** | ***** | ***** | | | CONT | EST |
| 002 PH | REPORTED | ***** | ***** | | | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | 6. | ***** | 9. | SU | | 2/M | GRAB |
| 003 BOD5 | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 4296 | 7710 | KG/D | ***** | ***** | ***** | | | 2/M | 24HC |
| 004 TOTAL SUS. SOLIDS | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 114 | 282 | KG/D | ***** | ***** | ***** | | | 2/M | 24HC |
| 007 D.O. OXYGEN | REPORTED | ***** | ***** | | | | ***** | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | NL | NL | ***** | MG/L | | 1/DAY | GRAB |
| 080 TEMPERATURE | REPORTED | ***** | ***** | | ***** | | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | ***** | NL | NL | C | | 1/DAY | IS |
| 509 OIL & GREASE | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 426 | 784 | KG/D | ***** | ***** | ***** | | | 2/M | GRAB |
| | REPORTED | | | | | | | | | | |
| | PERMIT REQUIREMENT | | | | | | | | | | |

ADDITIONAL PERMIT REQUIREMENTS OR COMMENTS

| BYPASSED AND OVERFLOWS | TOTAL OCCURRENCES | TOTAL FLOW (M. G.) | TOTAL BOD5 (K. G.) | OPERATOR IN RESPONSIBLE CHARGE | | | DATE | | | |
|---|----------------------|-----------------------|-----------------------|---|-----------|-----------------|--------|------|-----|-----|
| | | | | | | | | | | |
| I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS TO THE BEST OF MY KNOWLEDGE AND BELIEF TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS. SEE 18 U.S.C. & 1001 AND 33 U.S.C. & 1319. (Penalties under these statutes may include fines up to \$10,000 and/or maximum imprisonment of between 6 months and 5 years.) | | | | TYPED OR PRINTED NAME | SIGNATURE | CERTIFICATE NO. | YEAR | MO. | DAY | |
| | | | | PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT | | TELEPHONE | | | | |
| | | | | TYPED OR PRINTED NAME | SIGNATURE | AREA CODE | NUMBER | YEAR | MO. | DAY |
| | | | | | | | | | | |

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

Industrial Major 12/29/1999

PERMITTEE NAME/ADDRESS (INCLUDE
FACILITY NAME/LOCATION IF DIFFERENT)

NAME Omega Protein, Inc.
ADDRESS P. O. Box 175
Reedville VA 22539

FACILITY Omega Protein

| | |
|---------------|------------------|
| VA0003867 | 004 |
| PERMIT NUMBER | DISCHARGE NUMBER |

| MONITORING PERIOD | | | | | |
|-------------------|----|-----|------|----|-----|
| YEAR | MO | DAY | YEAR | MO | DAY |
| | | | | | |

FROM

TO

DEPT. OF ENVIRONMENTAL QUALITY
(REGIONAL OFFICE)

Kilmarnock Regional Office
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Kilmarnock VA 22482
(804) 435-3181

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| PARAMETER | | QUANTITY OR LOADING | | | QUALITY OR CONCENTRATION | | | NO. EX. | FREQUENCY OF ANALYSIS | SAMPLE TYPE |
|-------------------------|--------------------|---------------------|---------|-------|--------------------------|---------|---------|---------|-----------------------|-------------|
| | | AVERAGE | MAXIMUM | UNITS | MINIMUM | AVERAGE | MAXIMUM | | | |
| 001 FLOW | REPORTED | | | | ***** | ***** | ***** | | | |
| | PERMIT REQUIREMENT | NL | NL | MGD | ***** | ***** | ***** | | CONT | EST |
| 002 PH | REPORTED | ***** | ***** | | | ***** | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | 6. | ***** | 9. | SU | 5D/W | GRAB |
| 012 TOTAL PHOSPHORUS | REPORTED | | | | ***** | | | | | |
| | PERMIT REQUIREMENT | 93.9 | NL | KG/D | ***** | 2. | NL | MG/L | 1/3M | 24HC |
| 013 TOTAL NITROGEN | REPORTED | | | | ***** | | | | | |
| | PERMIT REQUIREMENT | NL | NL | KG/D | ***** | NL | NL | MG/L | 1/3M | 24HC |
| 059 AMMONIA AS N | REPORTED | ***** | ***** | | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | ***** | NL | NL | MG/L | 2/M | 24HC |
| 060 TEMPERATURE | REPORTED | ***** | ***** | | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | ***** | NL | 45 | C | 1/DAY | IS |
| | REPORTED | | | | | | | | | |
| | PERMIT REQUIREMENT | | | | | | | | | |
| | REPORTED | | | | | | | | | |
| | PERMIT REQUIREMENT | | | | | | | | | |

ADDITIONAL PERMIT REQUIREMENTS OR COMMENTS

| BYPASSES AND OVERFLOWS | TOTAL OCCURRENCES | TOTAL FLOW (M. G.) | TOTAL BOD5 (K. G.) | OPERATOR IN RESPONSIBLE CHARGE | | | DATE | | | |
|--|-------------------|--------------------|--------------------|---|-----------|-----------------|-----------|-----|-----|-----------|
| | | | | TYPED OR PRINTED NAME | SIGNATURE | CERTIFICATE NO. | YEAR | MO. | DAY | |
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| | | | | TYPED OR PRINTED NAME | | | SIGNATURE | | | AREA CODE |

PERMITTEE NAME/ADDRESS (INCLUDE
FACILITY NAME/LOCATION IF DIFFERENT)

NAME Omega Protein, Inc.
ADDRESS P. O. Box 175
Reedville VA 22539

FACILITY Omega Protein

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

VA0003867
PERMIT NUMBER

005
DISCHARGE
NUMBER

MONITORING PERIOD
FROM YEAR MO DAY TO YEAR MO DAY

Industrial Major 12/29/1999

DEPT. OF ENVIRONMENTAL QUALITY
(REGIONAL OFFICE)

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|-------------------------|-----------------------|---------------------|---------|-------|--------------------------|---------|---------|-------|------------|-----------------------------|----------------|
| | | AVERAGE | MAXIMUM | UNITS | MINIMUM | AVERAGE | MAXIMUM | UNITS | | | |
| 001 FLOW | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | NL | NL | MGD | ***** | ***** | ***** | | | CONT | EST |
| 002 PH | REPORTED | ***** | ***** | | | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | 6. | ***** | 9.0 | SU | | 5D/W | GRAB |
| 012 TOTAL PHOSPHORUS | REPORTED | | | | ***** | | | | | | |
| | PERMIT REQUIREMENT | 93.9 | NL | KG/D | ***** | 2. | NL | MG/L | | 1/3M | 24HC |
| 013 TOTAL NITROGEN | REPORTED | | | | ***** | | | | | | |
| | PERMIT REQUIREMENT | NL | NL | KG/D | ***** | NL | NL | MG/L | | 1/3M | IS |
| 039 AMMONIA AS N | REPORTED | ***** | ***** | | ***** | | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | ***** | NL | NL | MG/L | | 2/M | 24HC |
| 080 TEMPERATURE | REPORTED | ***** | ***** | | ***** | | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | ***** | NL | 45 | C | | 1/DAY | IS |
| | REPORTED | | | | | | | | | | |
| | PERMIT REQUIREMENT | | | | | | | | | | |
| | REPORTED | | | | | | | | | | |
| | PERMIT REQUIREMENT | | | | | | | | | | |

ADDITIONAL PERMIT REQUIREMENTS OR COMMENTS

| BYPASSES AND OVERFLOWS | TOTAL OCCURRENCES | TOTAL FLOW (M. G.) | TOTAL BOD5 (K. G.) | OPERATOR IN RESPONSIBLE CHARGE | | | DATE | | | | | | |
|---|----------------------|-----------------------|-----------------------|---|--|-----------|------|-----------------|--------|------|-----|-----|--|
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| | | | | TYPED OR PRINTED NAME | | SIGNATURE | | AREA CODE | NUMBER | YEAR | MO. | DAY | |
| | | | | | | | | | | | | | |

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FACILITY NAME/LOCATION IF DIFFERENT)

NAME Omega Protein, Inc.
ADDRESS P. O. Box 175
Reedville VA 22539

FACILITY Omega Protein

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)

VA0003867
PERMIT NUMBER

006
DISCHARGE
NUMBER

MONITORING PERIOD
YEAR MO DAY YEAR MO DAY
FROM TO

Industrial Major 12/28/1999

DEPT. OF ENVIRONMENTAL QUALITY
(REGIONAL OFFICE)

Kilmarnock Regional Office
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|-------------------------|-----------------------|---------------------|---------|-------|--------------------------|---------|---------|-------|------------|-----------------------------|----------------|
| | | AVERAGE | MAXIMUM | UNITS | MINIMUM | AVERAGE | MAXIMUM | UNITS | | | |
| 001 FLOW | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | NL | NL | MGD | ***** | ***** | ***** | | | CONT | EST |
| 002 PH | REPORTED | ***** | ***** | | | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | 6. | ***** | 9. | SU | | 3D/W | GRAB |
| 003 BOD5 | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 1755 | 3142 | KG/D | ***** | ***** | ***** | | | 3D/W | 24HC |
| 004 TOTAL SUS.SOLIDS | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 655 | 1609 | KG/D | ***** | ***** | ***** | | | 3D/W | 24HC |
| 012 TOTAL PHOSPHORUS | REPORTED | | | | ***** | | | | | | |
| | PERMIT REQUIREMENT | 178.4 | NL | KG/D | ***** | 2. | NL | MG/L | | 2/M | 24HC |
| 013 TOTAL NITROGEN | REPORTED | | | | ***** | | | | | | |
| | PERMIT REQUIREMENT | NL | NL | KG/D | ***** | NL | NL | MG/L | | 2/M | 24HC |
| 030 TEMPERATURE | REPORTED | ***** | ***** | | ***** | ***** | | | | | |
| | PERMIT REQUIREMENT | ***** | ***** | | ***** | ***** | 45. | C | | 1/DAY | IS |
| 500 OIL & GREASE | REPORTED | | | | ***** | ***** | ***** | | | | |
| | PERMIT REQUIREMENT | 372 | 635 | KG/D | ***** | ***** | ***** | | | 3D/W | GRAB |

ADDITIONAL PERMIT REQUIREMENTS OR COMMENTS

| BYPASSES AND OVERFLOWS | TOTAL OCCURRENCES | TOTAL FLOW (M. G.) | TOTAL BOD5 (K. G.) | OPERATOR IN RESPONSIBLE CHARGE | | | DATE | | | |
|---|----------------------|-----------------------|-----------------------|---|-----------|-----------------|--------|------|-----|-----|
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| | | | | TYPED OR PRINTED NAME | SIGNATURE | AREA CODE | NUMBER | YEAR | MO. | DAY |
| | | | | | | | | | | |

B. OTHER REQUIREMENTS AND SPECIAL CONDITIONS

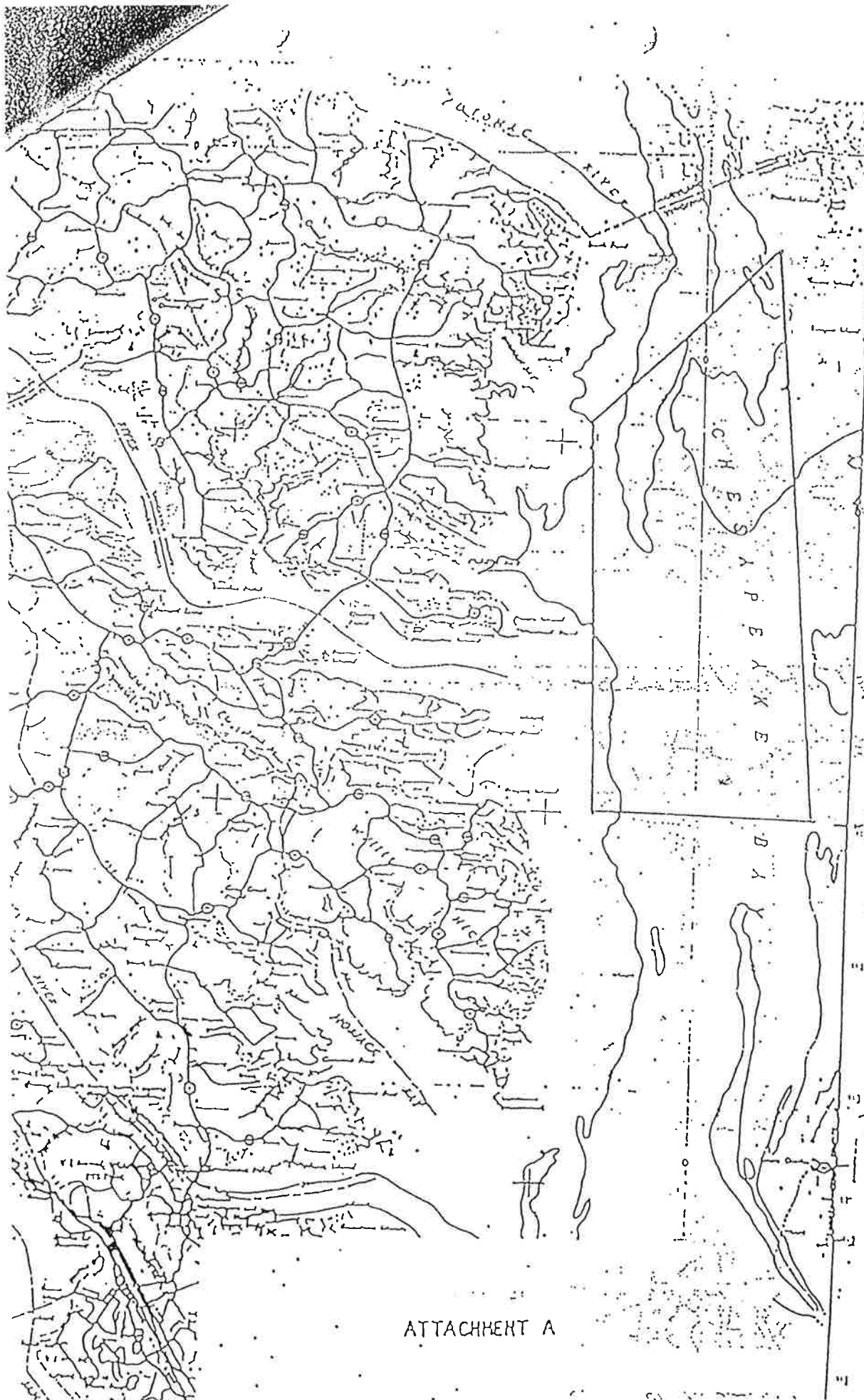
1. a. The maximum quantification levels (QL) shall be as follows:

| <u>Effluent Characteristic</u> | <u>Quantification Level</u> |
|--------------------------------|-----------------------------|
| Ammonia-N | 0.2 mg/l |
| Cyanide | 0.01 mg/l |

- b. The permittee may use any approved method which has a QL equal to or lower than the QL listed in B.1.a. Except as specified in B.1.d. below, the QL is defined as the lowest concentration used to calibrate a measurement system in accordance with the procedures published for the method.
- c. It is the responsibility of the permittee to ensure that proper QA/QC protocols are followed during the sampling and analytical procedures. QA/QC information shall be documented to confirm that appropriate analytical procedures have been used and the required Quantification Levels have been attained.
- d. An appropriate analytic method for metals shall be selected from the following list of EPA methods, or any approved method in 40 CFR Part 136, which will achieve a QL that is less than or equal to the QL specified in B.1.a. above.

| Metal | Analytical Methods |
|-------------|---|
| Antimony | 204.1; 200.7; 204.2; 1639; 1638; 200.8 |
| Arsenic | 200.7; 200.9; 200.8; 1632 |
| Barium | 208.1; 200.7; 208.2; 200.8 |
| Cadmium | 213.1; 200.7; 213.2; 200.9; 200.8; 1638; 1639; 1637; 1640 |
| Chromium | 218.1; 200.7; 218.2; 218.3; 200.9; 1639; 200.8 |
| Chromium VI | 218.4; 1636 |
| Copper | 220.1; 200.7; 220.2; 200.9; 1638; 1640; 200.8 |
| Iron | 236.1; 200.7; 236.2 |
| Lead | 239.1; 200.7; 239.2; 200.9; 200.8; 1638; 1637; 1640 |
| Manganese | 243.1; 200.7; 200.9; 243.2; 200.8 |
| Mercury | 200.7; 245.1; 200.8; 1631 |
| Nickel | 249.1; 200.7; 249.2; 1639; 200.9; 1638; 200.8; 1640 |
| Selenium | 200.7; 270.2; 200.8; 1638; 1639; 200.9 |
| Silver | 272.1; 200.7; 200.9; 272.2; 1638; 200.8 |
| Zinc | 289.1; 200.7; 1638; 1639; 200.8; 289.2 |

2. The discharge from Outfall 003 will be transported to the Chesapeake Bay and shall meet the following requirements:
- a. pH limitation for this outfall shall be met through analysis of samples taken at barge effluent in accordance with "b" described below.
- b. The discharge into the Chesapeake Bay will be allowed only into a quadrant specified by the following four points, designated by latitude 37° 30' 0", longitude 76° 12' 40"; latitude 37° 45' 55", longitude 76° 13' 15"; latitude 37° 53' 12", longitude 76° 4' 20"; latitude 37° 30' 0", longitude 76° 2' 35"; as shown on Attachment A.
- c. A Bay discharge vessel log must be maintained and made available to the Department of Environmental Quality for inspection upon request by the staff.



| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

B. OTHER REQUIREMENTS AND SPECIAL CONDITIONS - (Continued)

- d. While discharging in the designated area, the barge discharge shall be accomplished according to the following restrictions:

| Pump Rate | Barge Speed |
|-----------|-------------|
| 1000 gpm | >2 knots |
| 1500 gpm | >3 knots |
| 2000 gpm | >4 knots. |

The pump rate and barge speed shall be recorded in the discharge vessel log for each discharge.

- e. Monitoring of the designated area of the Chesapeake Bay (B.2.b.) for BOD₅, Ammonia, pH, Temperature, Dissolved Oxygen and Salinity, is required before and after each discharge, and the samples shall be grabbed at a depth of between six to eight feet below the surface of the water inside the visible discharge plume. These data shall be submitted with the DMR for that month to be received at the DEQ-Kilmarnock Office by the tenth of the following month.
3. The discharge of refrigeration water will be transported to the Chesapeake Bay and shall meet the following requirements:
- a. The pH of the effluent shall be between 6 and 9 S.U.
- b. The discharge from the permittee's vessels into the Chesapeake Bay will be allowed only east of a line between Fleeton Point Light and Black Can Buoy # 3. Such discharge shall be made while the vessel is underway and at such a rate that it is not visible.
- c. A Bay discharge vessel log must be maintained and made available to the Department of Environmental Quality for inspection upon request by the staff.
- d. Monitoring of the designated area of the Chesapeake Bay (B.2.b.) for BOD₅, Ammonia, pH, Temperature, Dissolved Oxygen and Salinity, is required twice a month before and after the discharge, and the samples shall be grabbed at a depth of between six to eight feet below the surface of the water inside the visible discharge plume. These data shall be submitted with the DMR for that month to be received at the DEQ-Kilmarnock Office by the tenth of the following month. Any discharge of refrigeration water to State waters must result in compliance with Water Quality Standards.
4. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitation or prohibition for a pollutant which is promulgated or approved under Sections 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
- a. Is more stringent than any effluent limitation on the pollutant already in the permit,
- or;
- b. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

5. The permittee shall notify the Department as soon as they know or have reason to believe:
- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following "notification levels":

B. OTHER REQUIREMENTS AND SPECIAL CONDITIONS - (Continued)

- (1) One hundred micrograms per liter (100 ug/l);
 - (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2, 4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
 - (3) Five times the maximum concentration value reported for the pollutant in the permit application; or
 - (4) The level established by the Board.
- b. That any activity has occurred or will occur which would result in any discharge on a non-routine or infrequent basis of a toxic pollutant which is not limited in the permit if that discharge will exceed the highest of the following "notification levels":
 - (1) Five hundred micrograms per liter (500 ug/l);
 - (2) One milligram per liter (1 mg/l) for antimony;
 - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application;
 - (4) The level established by the Board.
6. Any and all product, materials, industrial wastes, and/or other wastes resulting from the purchase, sale, mining, extraction, transport, preparation and/or storage of raw or intermediate materials, final product, by-product or wastes, shall be handled, disposed of, and/or stored in such a manner so as not to permit a discharge of such a product, materials, industrial wastes, and/or other wastes to State waters, except as expressly authorized.
7. This permit shall be modified or alternatively revoked and reissued to include new or alternative nutrient limitations should the Board adopt nutrient standards for the Chesapeake Bay and tributary river basins, or if a future water quality regulation, statute, or water quality management plan requires new or alternative nutrient control.
8. Operations and Maintenance Manual

The permittee shall maintain an operation and maintenance manual to address environmental operations to comply with this permit. This manual shall address, as a minimum, maintenance and critical spare parts inventory of certain pumps and other equipment used in the 003 and refrigeration water discharges, sampling and recordkeeping protocols at all of the outfalls, and spill procedures and general housekeeping to avoid miscellaneous discharges at the repair docks. Any changes in the practices and procedures followed by the permittee shall be documented and submitted to the Department of Environmental Quality, Kilmarnock Office, for staff approval within 90 days of the effective date of the changes. The permittee shall operate and maintain facilities necessary to the compliance with this permit in accordance with the approved manual, which becomes an enforceable part of the permit.
9. The permittee shall employ or contract at least one wastewater operator who holds a current wastewater license appropriate for the permitted facility. A Class III licensed operator is required for this facility. The license shall be issued in accordance with Title 54.1 of the Code of Virginia and the regulations of the Board for Waterworks and Wastewater Works Operators. The permittee shall notify the Department in writing whenever he is not complying, or has grounds for anticipating he will not comply with this requirement. The notification shall include a statement of reasons and a prompt schedule for achieving compliance.
10. The permittee shall complete and submit Item V and VI of Form 2C, for Outfall 005, or, alternatively, Outfall 006, no later than two years following the permit's modification date. Following an evaluation of the required information, this permit may be modified or alternatively, revoked and reissued in order to incorporate additional or different permit conditions.

B. OTHER REQUIREMENTS AND SPECIAL CONDITIONS - (Continued)

11. Best Management Practices (BMP)

- a. The permittee shall comply with the following at the Off Season Maintenance area shown in Attachment B:

- (1) The yard shall be cleaned on a regular basis to minimize the possibility that runoff will carry spent abrasives, paints, solvents, cleaners, anti-corrosive compounds, paint chips, scrap metal, trash, garbage, petroleum products or other debris into the receiving water. Cleanup of areas contributing runoff shall consist of mechanical or manual methods to sweep up and collect the debris.

Mechanical cleanup may be accomplished by mechanical sweepers, front end loaders, vacuum cleaners or other innovative equipment. Manual methods include the use of shovels and brooms.

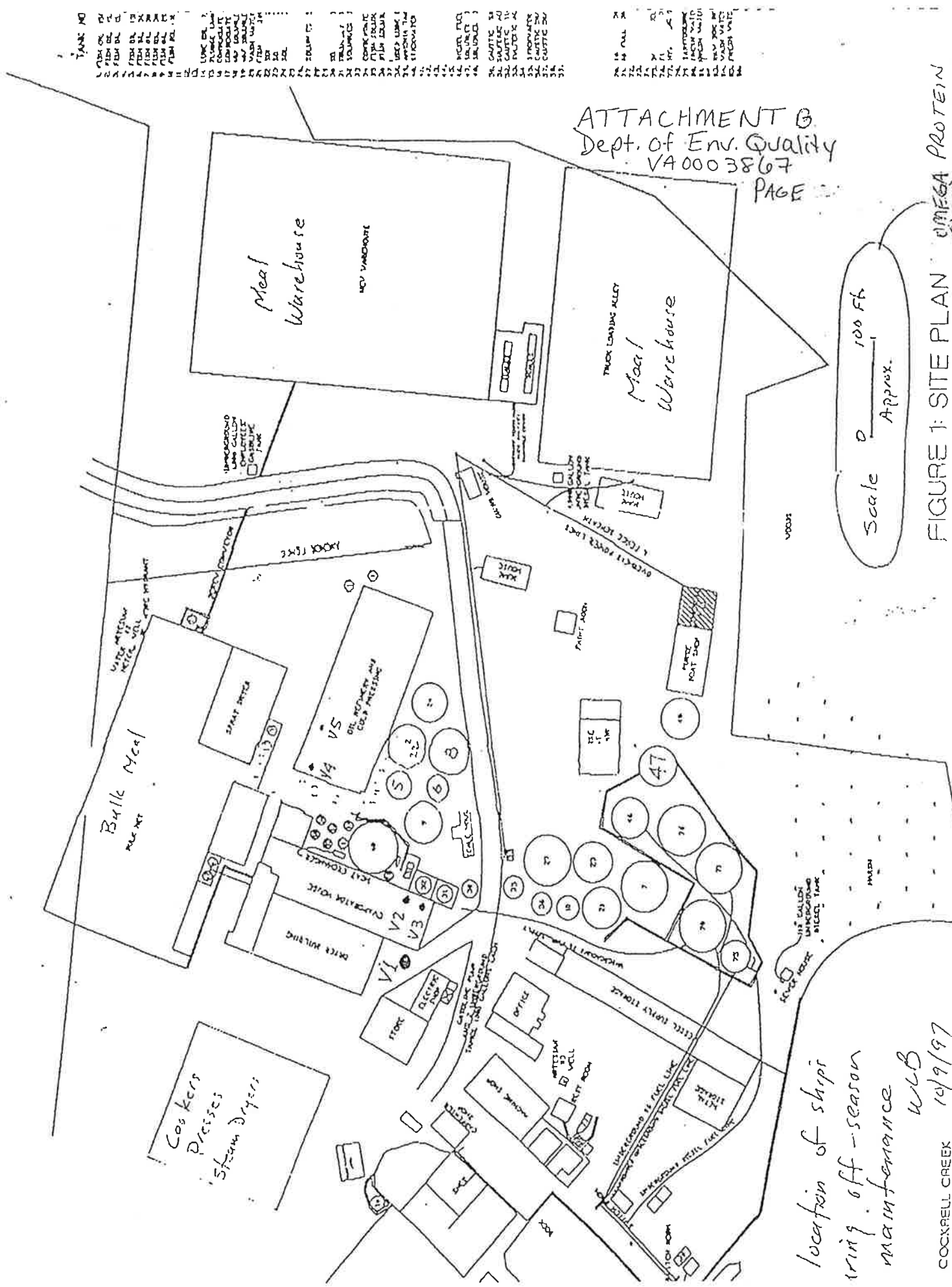
- (2) Acceptable methods of control shall be utilized during spray painting, with the intent of preventing overspray from falling into the receiving water. For marine railways, control measures include the following: barriers or shrouds beneath the hull; barriers or shrouds between the hull and temporary/permanent support structures, from the flying bridge to temporary/permanent support structure, or from the bow and stern of the vessel to temporary support structures erected for that purpose. The bottom edge of free hanging barriers shall be weighted to hold them in place during a light breeze.
- (3) Fixed or floating platforms shall be used as work surfaces when working at the water surface, in order to provide a surface to catch spent abrasives. These platforms must be cleaned at the end of each work shift.
- (4) Overspray from painting in yard facilities shall be controlled to minimize the spreading of wind blown materials.
- (5) When water blasting, hydroblasting, or water-cone blasting is used to remove paint from surfaces, the resulting water and debris shall be collected in a sump or other suitable device. This mixture then will be either delivered to appropriate containers for removal and disposal or subjected to treatment to concentrate the solids for proper disposal and prepare the water for reuse or discharge through an authorized outfall.
- (6) All shipboard cooling water and process water shall be directed away from contact with paint and other debris. Contact of paint with water shall be prevented by proper segregation and control of wastewater streams.
- (7) The mixing of paints and solvents shall be carried out in locations and under conditions such that no spill shall enter State waters.
- (8) Drip pans or other protective devices shall be required for all paint mixing and solvent transfer operations, unless the mixing operation is carried out in controlled areas away from storm drains, surface waters, shorelines and piers. Drip pans, drop cloths or tarpaulins shall be used whenever paints and solvents are mixed. Sorbents must be on hand to soak up liquid spills. Paints and solvents shall not be mixed in areas where spillage would have direct access to State waters unless containment measures are employed.

FIGURE 1: SITE PLAN

Scale 0 100 Ft. Approx.

PAGE

ATTACHMENT B
Dept. of Env. Quality
VA0003867



B. OTHER REQUIREMENTS AND SPECIAL CONDITIONS - (Continued)

- (9) Paint and solvent spills shall be treated as oil spills and shall be prevented from reaching storm drains or deck drains and subsequent discharge into the water.
- (10) The amount of paint stored within the marine railway area and/or on a lighter floor shall be kept to a minimum.
- (11) Prior to hose testing, paint residues, and other debris from the area of drydocks shall be removed to prevent pollutants from entering the adjacent river.
- (12) Waste material (paint chips, etc.) shall be cleaned up from the marine railway area before the incoming tide.

b. Reporting

The permittee shall submit a **monthly report** certifying compliance or noncompliance with all conditions of the preceding BMP's pertaining to drydocks, piers, wet slips, marine railways and shore side work areas. The report shall include a weekly audit checklist for these areas and a narrative description of observations. The audit shall be conducted by personnel not routinely associated with the aforementioned activities. **The reporting form is provided as Attachment C to this permit.**

ATTACHMENT C

Facility Name: Omega Protein

Address: Reedville, Va.

VPDES Permit No.: VA0003867

Report Period: From / / To / /

Paint Area

COMPLIANCE / NONCOMPLIANCE *

(check as appropriate)

*Comments on Noncompliance

| Name of Principal Exec. Officer or Authorized Agent / | Title |
|---|-------|
| | |

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. paragraph 1001 and 33 U.S.C. paragraph 1319. (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years).

Signature of Principal Officer or Authorized Agent / Date

12. Water Quality Standards Monitoring

The permittee shall monitor the effluent at Outfalls 001, 002, 003, 004 and 005, or alternatively, Outfalls 002, 003, and 006 for the following chemicals according to the indicated analysis number, quantification level, sample type, and frequency. Monitoring shall be initiated after the start of the third year from the permit's effective date. Using Attachment D as the reporting form, the data shall be submitted with the next permit reissuance application, which is due at least 180 days prior to the expiration date of the permit. Monitoring and analysis shall be conducted in accordance with 40 CFR Part 136 or alternative EPA approved method. Alternative EPA approved methods other than those specified in Attachment D may be used with prior notification to and approval from DEQ. It is the responsibility of the permittee to ensure that proper QA/QC protocols are followed during the sample gathering and analytical procedures. The Department will use this data for making specific permit decisions in the future. This permit may be modified or alternatively revoked and reissued to incorporate limits for any of the substances listed below.

Chemical monitoring required by Part I.A. of this permit shall satisfy the requirements of this condition where the two coincide, provided the specified minimum quantification levels/specific target values and sample types of this condition are met.

If chemical monitoring is not required by Part I.A. of this permit until completion of a schedule of compliance, then no monitoring for those same parameters will be required under this condition until completion of that schedule.

| CHEMICAL | EPA ANALYSIS NUMBER | QUANTIFICATION LEVEL (1) | SAMPLE TYPE (2) | FREQUENCY OF ANALYSIS (3) | | | | | | Specific Target Value $\mu\text{g/l}$ (4) (for Metals Quantification Level Determination) | | | | | |
|-----------------------------------|---------------------|--------------------------|-----------------|---------------------------|-----|-----|-----|-----|-----|--|-------------|----------|--------|--------|----------|
| | | | | 001 | 002 | 003 | 004 | 005 | 006 | | | | | | |
| | | | | 001 | 002 | 003 | 004 | 005 | 006 | | | | | | |
| Metals | | | | | | | | | | | | | | | |
| Antimony (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 215000 | 215000 | 215000 | 215000 | 215000 | 215000 |
| Arsenic III (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 55.2 | 634.8 | 55.2 | 55.2 | 55.2 | 55.2 |
| Cadmium (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 34.4 | 279 | 34.4 | 34.4 | 34.4 | 34.4 |
| Chromium III* | (5) | (5) | G | Once per 5 Years | | | | | | X No | X Saltwater | X Stand- | X ard | X for | X Cr III |
| Chromium VI (dissolved form only) | (5) | (5) | G | Once per 5 Years | | | | | | 880 | 1500 | 880 | 880 | 880 | 880 |
| Copper (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 2.32 | 26.68 | 2.32 | 2.32 | 2.32 | 2.32 |
| Lead (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 176 | 255 | 176 | 176 | 176 | 176 |
| Mercury (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 1.0 | 1.0 | 1.68 | 1.0 | 1.0 | 1.0 |
| Nickel (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 60 | 249 | 60 | 60 | 60 | 60 |

| CHEMICAL | EPA ANALYSIS NUMBER | QUANTIFICATION LEVEL (1) | SAMPLE TYPE (2) | FREQUENCY OF ANALYSIS (3) | | | | | | Specific Target Value µg/l (4) (for Metals Quantification Level Determination) | | | | | |
|---------------------------------|---------------------|--------------------------|-----------------|---------------------------|-----|-----|-----|-----|-----|---|-------|------|------|------|------|
| | | | | 001 | 002 | 003 | 004 | 005 | 006 | 001 | 002 | 003 | 004 | 005 | 006 |
| Selenium (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 240 | 2130 | 240 | 240 | 240 | 240 |
| Silver (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 1.84 | 21.16 | 1.84 | 1.84 | 1.84 | 1.84 |
| Zinc (Dis.) | (5) | (5) | G | Once per 5 Years | | | | | | 76 | 874 | 76 | 76 | 76 | 76 |
| Pesticides/PCB's | | | | | | | | | | | | | | | |
| Aldrin | 608 | 0.05 | 3G | Once per 5 Years | | | | | | | | | | | |
| Chlordane | 608 | 0.2 | 3G | Once per 5 Years | | | | | | | | | | | |
| Chlorpyrifos (Dursban) | 622 | (7) | 3G | Once per 5 Years | | | | | | | | | | | |
| DDD | 608 | 0.1 | 3G | Once per 5 Years | | | | | | | | | | | |
| DDE | 608 | 0.1 | 3G | Once per 5 Years | | | | | | | | | | | |
| DDT | 608 | 0.1 | 3G | Once per 5 Years | | | | | | | | | | | |
| Demeton | (6) | (7) | 3G | Once per 5 Years | | | | | | | | | | | |
| Dieldrin | 608 | 0.1 | 3G | Once per 5 Years | | | | | | | | | | | |
| Endosulfan | 608 | 0.1 | 3G | Once per 5 Years | | | | | | | | | | | |
| Endrin | 608 | 0.1 | 3G | Once per 5 Years | | | | | | | | | | | |
| Guthion | 622 | --- | 3G | Once per 5 Years | | | | | | | | | | | |
| Heptachlor | 608 | 0.05 | 3G | Once per 5 Years | | | | | | | | | | | |
| Hexachlorocyclohexane (Lindane) | 608 | 0.05 | 3G | Once per 5 Years | | | | | | | | | | | |
| Kepone | (6) | (7) | 3G | Once per 5 Years | | | | | | | | | | | |
| Malathion | (6) | (7) | 3G | Once per 5 Years | | | | | | | | | | | |
| Methoxychlor | (6) | (7) | 3G | Once per 5 Years | | | | | | | | | | | |
| Mirex | (6) | (7) | 3G | Once per 5 Years | | | | | | | | | | | |
| Parathion | (6) | (7) | 3G | Once per 5 Years | | | | | | | | | | | |
| PCB-1242 | 608 | 1.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| PCB-1254 | 608 | 1.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| PCB-1221 | 608 | 1.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| PCB-1232 | 608 | 1.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| PCB-1248 | 608 | 1.0 | 3G | Once per 5 Years | | | | | | | | | | | |

| CHEMICAL | EPA ANALYSIS NUMBER | QUANTIFICATION LEVEL (1) | SAMPLE TYPE (2) | FREQUENCY OF ANALYSIS (3) | | | | | | Specific Target Value $\mu\text{g/l}$ (4) (for Metals Quantification Level Determination) | | | | | |
|----------------------------|---------------------|--------------------------|-----------------|---------------------------|-----|-----|-----|-----|-----|--|--|--|--|--|--|
| | | | | 001 | 002 | 003 | 004 | 005 | 006 | | | | | | |
| | | | | 001 | 002 | 003 | 004 | 005 | 006 | | | | | | |
| PCB-1260 | 608 | 1.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| PCB-1016 | 608 | 1.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Toxaphene | 608 | 5.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Base Neutral Extractables | | | | | | | | | | | | | | | |
| Acenaphthene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Anthracene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Benzo(a)-anthracene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Benzo(b)fluor-anthene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Benzo(k)fluor-anthene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Benzo(a)pyrene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Butyl benzyl phthalate | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Chrysene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Dibenz (a,h) anthracene | 625 | 20.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Dibutyl phthalate | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| 1,2-Dichloro-enzyme | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| 1,3-Dichloro-enzyme | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| 1,4-Dichloro-enzyme | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Diethyl Phthalate | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Di-2-Ethyl-hexyl Phthalate | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| 2,4-Dinitrotoluene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Fluor-anthene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Fluorene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Indeno (1,2,3,-cd)pyrene | 625 | 20.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Isophorone | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Naphthalene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |

| CHEMICAL | EPA ANALYSIS NUMBER | QUANTIFICATION LEVEL (1) | SAMPLE TYPE (2) | FREQUENCY OF ANALYSIS (3) | Specific Target Value $\mu\text{g/l}$ (4) (for Metals Quantification Level Determination) | | | | | |
|------------------------|---------------------|--------------------------|-----------------|---------------------------|--|-----|-----|-----|-----|-----|
| | | | | | 001 | 002 | 003 | 004 | 005 | 006 |
| Nitrobenzene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | |
| Pyrene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | |
| 1,2,4 Trichlorobenzene | 625 | 10.0 | 3G | Once per 5 Years | | | | | | |
| Volatiles | | | | | | | | | | |
| Benzene | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Bromoform | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Carbon Tetra-chloride | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Chloro-dibromomethane | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Chloroform | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Dichloromethane | 624 | 20.0 | G | Once per 5 Years | | | | | | |
| Dichloro-bromo-methane | 624 | 20.0 | G | Once per 5 Years | | | | | | |
| 1,2-Dichloro-ethane | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| 1,1-Dichloroethylene | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Ethyl-benzene | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Monochloro-benzene | 624 | 50.0 | G | Once per 5 Years | | | | | | |
| Tetrachloro-ethylene | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Toluene | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Trichloroethylene | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Vinyl Chloride | 624 | 10.0 | G | Once per 5 Years | | | | | | |
| Acids Extractables | | | | | | | | | | |
| 2-Chlorophenol | 625 | 10.0 | 3G | Once per 5 Years | | | | | | |
| 2,4 Dichlorophenol | 625 | 10.0 | 3G | Once per 5 Years | | | | | | |
| 2,4 Dimethylphenol | 625 | 10.0 | 3G | Once per 5 Years | | | | | | |
| Pentachlorophenol | 625 | 50.0 | 3G | Once per 5 Years | | | | | | |
| Phenol ⁽⁶⁾ | 625 | 10.0 | 3G | Once per 5 Years | | | | | | |

| CHEMICAL | EPA ANALYSIS NUMBER | QUANTIFICATION LEVEL (1) | SAMPLE TYPE (2) | FREQUENCY OF ANALYSIS (3) | | | | | | Specific Target Value $\mu\text{g/l}$ (4) (for Metals Quantification Level Determination) | | | | | |
|-----------------------------------|---------------------|--------------------------|-----------------|---------------------------|-----|-----|-----|-----|-----|--|--|--|--|--|--|
| | | | | 001 | 002 | 003 | 004 | 005 | 006 | | | | | | |
| 2,4,6-Tri-chloro-phenol | 625 | 10.0 | 3G | Once per 5 Years | | | | | | | | | | | |
| Miscellaneous | | | | | | | | | | | | | | | |
| Ammonia as $\text{NH}_3\text{-N}$ | 350.1 | 200 | C | Once per 5 Years | | | | | | | | | | | |
| Total Residual Chlorine | (6) | 100 | G | Once per 5 Years | | | | | | | | | | | |
| Cyanide | 335.2 | 10.0 | G | Once per 5 Years | | | | | | | | | | | |
| Fecal Coliform N/CML | (6) | (7) | G | Once per 5 Years | | | | | | | | | | | |
| Hydrogen Sulfide | (6) | (7) | G | Once per 5 Years | | | | | | | | | | | |
| Nitrate (as mg/l N) | (6) | (7) | C | Once per 5 Years | | | | | | | | | | | |
| Tributyltin ⁽⁹⁾ | NBSR 85-3295 | (7) | C | Once per 5 Years | | | | | | | | | | | |
| Xylenes (Total) | SW 846 Method 8021B | (7) | G | Once per 5 Years | | | | | | | | | | | |

Units for the quantification level are micrograms/liter ($\mu\text{g/l}$) unless noted

- (1) Quantification level (QL) is defined as the lowest concentration used for the calibration of a measurement system when the calibration is in accordance with the procedures published for the required method.

Units for the quantification level and the specific target value are micrograms/liter unless otherwise specified.

Quality control and quality assurance information shall be submitted to document that the required quantification level has been attained.

- (2) Sample Type

G = Grab = An individual sample collected in less than fifteen (15) minutes. Substances specified with "grab" sample type shall only be collected as grabs. The permittee may analyze multiple grabs and report the average results provided that the individual grab results are also reported.

- (2) Sample Type, Cont.

3G = 1 Grab Sample every 8 hours. The permittee shall analyze each sample individually. The results may be averaged provided that the individual grab results are also reported.

C = Composite = A 24-hour composite unless otherwise specified. The composite shall be a combination of individual

samples, taken proportional to flow, obtained at hourly or smaller time intervals. The individual samples may be of equal volume for flows that do not vary by +/- 10 percent over a 24-hour period. For composite metals samples, the individual sample aliquots shall be filtered and preserved immediately upon collection and prior to compositing.

(3) Frequency

1/5 YR = once after the start of the third year from the permit's effective date
X = no monitoring required

- (4) Specific Target Value is the approximate value that may initiate a wasteload allocation analysis. Target values are not wasteload allocations or effluent limitations. The specific target values are subject to change based on additional information such as hardness data, receiving stream flow and design flows.
- (5) A specific analytical method is not specified. An appropriate method shall be selected from the following list of EPA methods (or any approved method presented in 40 CFR Part 136) which will achieve a quantification level that is less than the indicated specific target value for each metal. If the test result is less than the specified specific target value, a "<[QL]" shall be reported where the actual analytical test QL is substituted for [QL].

| Metal | Analytical Methods |
|-------------|---|
| Antimony | 204.1; 200.7; 204.2; 1639; 1638; 200.8 |
| Arsenic | 200.7; 200.9; 200.8; 1632 |
| Barium | 208.1; 200.7; 208.2; 200.8 |
| Cadmium | 213.1; 200.7; 213.2; 200.9; 200.8; 1638; 1639; 1637; 1640 |
| Chromium* | 218.1; 200.7; 218.2; 218.3; 200.9; 1639; 200.8 |
| Chromium VI | 218.4; 1636 |
| Copper | 220.1; 200.7; 220.2; 200.9; 1638; 1640; 200.8 |
| Iron | 236.1; 200.7; 236.2 |
| Lead | 239.1; 200.7; 239.2; 200.9; 200.8; 1638; 1637; 1640 |
| Manganese | 243.1; 200.7; 200.9; 243.2; 200.8 |
| Mercury | 200.7; 245.1; 200.8; 1631 |
| Nickel | 249.1; 200.7; 249.2; 1639; 200.9; 1638; 200.8; 1640 |
| Selenium | 200.7; 270.2; 200.8; 1638; 1639; 200.9 |
| Silver | 272.1; 200.7; 200.9; 272.2; 1638; 200.8 |
| Zinc | 289.1; 200.7; 1638; 1639; 200.8; 289.2 |

* Chromium III is measured by the total chromium analysis. If the result of the total chromium analysis is less than or equal to the QL (or specific target value), the result for chromium III can be reported as less than QL.

- (6) Any approved method presented in 40 CFR part 136.
- (7) The QL is at the discretion of the permittee. For any substances addressed in 40 CFR Part 136, the permittee shall use one of the approved methods in 40 CFR Part 136.
- (8) Requires continuous extraction.
- (9) DEQ's approved analysis for TBT may also be used [See A Manual for the Analysis of Butyltins in Environmental Systems by the Virginia Institute of Marine Science dated November 1996].

13. Compliance Schedule

The permittee shall achieve compliance with the final limits and monitoring requirements for Ammonia-nitrogen at outfalls 001, 002, 003 and the proposed 006 and Cyanide at outfall 001 and the proposed 006 as specified in this permit in accordance with the following schedule:

SCHEDULE OF COMPLIANCE FOR AMMONIA AND CYANIDE

| | |
|--|--|
| 1. Initiate plans for compliance | Within 90 days after December 17, 1997. |
| 2. Report of progress to DEQ | Quarterly. |
| 3. Achieve Compliance with Effluent Limitations. | By December 17, 2001. |

No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit to the Department's staff, either a report of progress, or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

14. Plans for the multiport diffuser at outfall 002 must be approved by the Department of Environmental Quality and constructed **prior to December 17, 2001.** This diffuser must conform to the design of the "long diffuser" described in the fact sheet.

15. Monthly Average and Daily Maximum Compliance

Monthly Average Limit

Compliance with the monthly average limitations and/or reporting requirements for the parameters listed in Part I.B.1. above shall be determined as follows: All data below the specified test method QL shall be treated as zero. All data equal to or above the QL shall be treated as it is reported. An arithmetic average shall be calculated using all reported data, including the defined zeros. This arithmetic average shall be reported on the DMR. If all data are less than the QL, a "<[QL]" shall be reported on the DMR, where the actual test method QL shall be substituted for "[QL]".

Daily Maximum Limit

Compliance with the daily maximum limitations and/or reporting requirements for the parameters listed in Part I.B.1. above shall be determined as follows: The highest single value of data that is equal to or above the test method QL shall be reported on the DMR. If all data are less than the QL, a "<[QL]" shall be reported on the DMR, where the actual test method QL shall be substituted for "[QL]".

C. OTHER REQUIREMENTS AND SPECIAL CONDITIONS

1. Toxics Management Program

a. Biological Monitoring (outfall 003):

- (1) If the permittee elects to discharge effluent (evaporator condensate only) via outfall 003, then the following testing will be required for each discharge event until the first four discharge events have occurred:

Two acute toxicity tests using grab samples of final effluent from outfall 003. The acute tests shall be 48-hour static tests using Cyprinodon variegatus and Mysidopsis bahia, both conducted in such a manner and at sufficient dilutions for calculation of a valid LC_{50} .

- (2) The following criterion shall be used in evaluating the toxicity test data generated in (1) above: LC_{50} greater than or equal to 100% effluent concentration in six of the total of eight acute toxicity tests
- (3) If effluent from outfall 003 fails the above criterion it shall be considered to have demonstrated actual or potential toxicity. Accordingly, continued discharge of this effluent via outfall 003 shall be prohibited. In order to resume discharging from this outfall the permittee must:
 - (a) assure the absence of actual or potential toxicity, or
 - (b) demonstrate that there is, or would be, no adverse impact from the discharge on all reasonable and beneficial uses of the state's waters.

b. Biological Monitoring (Outfall 001 or 006):

- (1) In accordance with the schedule in d. below and commencing within three months of the effective date of this permit and continuing for the duration of the permit, the permittee shall conduct annual acute and chronic toxicity tests using 24-hour flow-proportioned samples of final effluent from outfall 001 or 006. The acute tests shall be 48-hour static tests using Cyprinodon variegatus, conducted in such a manner and at sufficient dilutions for calculation of a valid LC_{50} . The chronic tests shall be static renewal tests using Cyprinodon variegatus. The C. variegatus test shall be a 7-day larval survival and growth test. These chronic tests shall be conducted in such a manner and at sufficient dilutions to determine the "No Observed Effect Concentration" (NOEC) for survival and growth. The permittee may provide additional samples to address data variability. These data may be included in the evaluation of effluent toxicity. The results of all such additional analyses shall be reported. Technical assistance in developing the procedures for these tests shall be provided by the Department of Environmental Quality staff, if requested by the permittee. Test protocols and the use of alternative species shall be approved by the Department of Environmental Quality staff prior to initiation of testing.
- (2) In the event that annual testing (1) above or quarterly testing as in (4) below is not possible due to lack of operations at the facility, the permittee shall notify the Department of Environmental Quality's Kilmarnock Regional Office with the DMR submitted for the month following the quarter in which the tests were to have been performed. In such cases, the schedule shall be adjusted ahead by one quarter. In the event that the plant is not in operation for two or more consecutive quarters, the procedures for notification of the regional office and schedule adjustments shall

be repeated for each quarter in which the plant is not in operation.

- (3) If, in the testing according to b.(1) above, any of the annual acute toxicity tests yields an LC_{50} of less than 100% effluent, or any of the annual chronic tests yields an NOEC of less than the IWC of 2%, the test shall be repeated within three months.
 - (a) If the retest also indicates an LC_{50} of less than 100% effluent or an NOEC less than the IWC, quarterly toxicity testing as in b.(4) below shall commence within three months. The results of these tests will be included in the evaluation of the need for toxicity reduction.
 - (b) If the retest does not confirm the results of the first test, then annual testing in accordance with the annual compliance schedule shall resume.
- (4) If required in b.(3)(a) above, the permittee shall conduct quarterly acute and chronic toxicity tests for a period of one year using 24-hour flow-proportioned samples of final effluent from outfall 001 or 006. The quarters shall be defined by the seasonal operation of the facility: First Quarter: May-July; Second Quarter: August-October; Third Quarter: November-January; Fourth Quarter: February-April. The acute tests shall be 48-hour static tests using Mysidopsis bahia and Cyprinodon variegatus, both conducted in such a manner and at sufficient dilutions for calculation of a valid LC_{50} . The chronic tests shall be static renewal tests using M. bahia and C. variegatus. The M. bahia test shall be a 7-day larval survival, growth and/or fecundity test, and the C. variegatus test shall be a 7-day larval survival and growth test. These chronic tests shall be conducted in such a manner and at sufficient dilutions to determine the "No Observed Effect Concentration" (NOEC) for survival and reproduction or growth. The permittee may provide additional samples to address data variability during the one year period of initial data generation. These data may be included in the evaluation of effluent toxicity. The results of all such additional analyses shall be reported. Technical assistance in developing the procedures for these tests shall be provided by the Department of Environmental Quality staff, if requested by the permittee. Test protocols and the use of alternative species shall be approved by the Department of Environmental Quality staff prior to initiation of testing.
- (5) The following criteria shall be used in evaluating the toxicity test data generated in (4) above:
 - (a) LC_{50} greater than or equal to 100% effluent in six of the total of eight acute toxicity tests, or in at least 75% of the tests conducted, if more than eight tests are conducted.
 - (b) No Observed Effect Concentration (NOEC) greater than or equal to the Instream Waste Concentration (IWC) of 2%, in six of the total of eight toxicity tests, or in at least 75% of the tests if more than eight tests are conducted.

Any effluent failing either of the above criteria shall be considered to have demonstrated actual or potential toxicity and a Toxicity Reduction Evaluation (TRE) will be required.

- (6) If, prior to completing the monitoring requirements specified in b.(4) above, it is determined that the effluent fails the decision criteria outlined in b.(5), a TRE may be required. Upon notification by the Department of Environmental Quality that a TRE is required, the permittee shall initiate a TRE and may stop conducting the toxicity tests of b.(4).
- (7) Following successful completion of the testing of outfall 001 or 006 as in (5)(a) and (b) above,

C. OTHER REQUIREMENTS AND SPECIAL CONDITIONS - Continued

the permittee shall resume annual acute and chronic toxicity testing of the outfall. The first annual tests shall be conducted within three months from the last quarterly tests. The test organisms shall be those identified as the most sensitive species from the quarterly acute and chronic tests, or alternative species approved by the Department of Environmental Quality staff. Annual testing of the outfall is not required in cases where the need for a TRE of the outfall has been established.

- (8) If, in the testing according to b.(7) above, any of the annual acute toxicity tests yields an LC_{50} of less than 100% effluent, or any of the annual chronic tests yields an NOEC less than the IWC of 2%, the test shall be repeated within three months.
 - (a) If the retest also indicates an LC_{50} of less than 100% effluent or an NOEC less than the IWC, quarterly toxicity testing as in b.(4) above shall commence within three months. The results of these tests will be included in the evaluation of the need for toxicity reduction.
 - (b) If the retest does not confirm the results of the first test, then annual testing in accordance with the annual compliance schedule shall resume.

c. Toxicity Reduction Evaluation (outfall 001 or 006):

- (1) If the results of this Toxics Management Program or other available information indicate that the wastewaters are actually or potentially toxic, the permittee shall submit:
 - (a) a Toxicity Reduction Evaluation (TRE) plan, or
 - (b) at the permittee's option, an instream impact study plan, and
 - (c) an accompanying implementation schedulewithin 120 days of the notification of such a determination by the Department of Environmental Quality.
- (2) The requirement of this plan shall be to:
 - (a) assure the absence of actual or potential toxicity, or
 - (b) to demonstrate that there is, or would be, no adverse impact from the discharge on all reasonable and beneficial uses of the state's waters.
- (3) Upon completion of the review of the plan, the permittee shall implement the plan and the permit may be modified or alternatively revoked and reissued in order to reflect appropriate permit conditions and a compliance schedule.

C. OTHER REQUIREMENTS AND SPECIAL CONDITIONS - Continued

d. Reporting Schedule:

The permittee shall submit 2 copies of the results of the toxicity tests specified for outfall 001 or 006 in this Toxics Management Program in accordance with the following schedule:

| | |
|--|---|
| (1) Submit toxicity test protocols for approval | Within two months following the effective date of the permit |
| (2) Conduct first annual biological tests | Within three months following the effective date of the permit |
| (3) Submit results of d.(2) | With the Discharge Monitoring Report (DMR) for the fourth month following the effective date of the permit |
| (4) Conduct subsequent annual biological tests | Within subsequent twelve month periods from d.(2) |
| (5) Submit results of d.(4) | With the DMRs submitted every twelve months from d.(3) |

CONDITIONS APPLICABLE TO ALL VPDHS PERMITS

A. Monitoring.

1. Samples and measurements taken as required by this permit shall be representative of the monitored activity.
2. Monitoring shall be conducted according to procedures approved under Title 40 Code of Federal Regulations Part 136 or alternative methods approved by the U.S. Environmental Protection Agency, unless other procedures have been specified in this permit.
3. The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will insure accuracy of measurements.

B. Records.

1. Records of monitoring information shall include:
 - a. The date, exact place, and time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. The date(s) and time(s) analyses were performed;
 - d. The individual(s) who performed the analyses;
 - e. The analytical techniques or methods used; and
 - f. The results of such analyses.
2. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years, the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period of retention shall be extended automatically during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the permittee, or as requested by the Board.

C. Reporting Monitoring Results.

1. The permittee shall submit the results of the monitoring required by this permit not later than the 10th day of the month after monitoring takes place, unless another reporting schedule is specified elsewhere in this permit. Monitoring results shall be submitted to:

Kilmarnock Office
P. O. Box 669
Kilmarnock, VA 22482
2. Monitoring results shall be reported on a Discharge Monitoring Report (DMR) or on forms provided, approved or specified by the Department.
3. If the permittee monitors any pollutant specifically addressed by this permit more frequently than required by this permit using test procedures approved under Title 40 of the Code of Federal Regulations Part 136 or using other test procedures approved by the U.S. Environmental Protection Agency or using procedures specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the Department.

C. Reporting Monitoring Results (cont.)

4. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

D. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Board may require the permittee to furnish, upon request, such plans, specifications, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purposes of the State Water Control Law. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

E. Compliance Schedule Reports

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Unauthorized Discharges

Except in compliance with this permit, or another permit issued by the Board, it shall be unlawful for any person to:

1. Discharge into state waters sewage, industrial wastes, other wastes, or any noxious or deleterious substances; or
2. Otherwise alter the physical, chemical or biological properties of such state waters and make them detrimental to the public health, or to animal or aquatic life, or to the use of such waters for domestic or industrial consumption, or for recreation, or for other uses.

G. Reports of Unauthorized Discharges

Any permittee who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance into or upon state waters in violation of Part II F; or who discharges or causes or allows a discharge that may reasonably be expected to enter state waters in violation of Part II F, shall notify the Department of the discharge immediately upon discovery of the discharge, but in no case later than 24 hours after said discovery. A written report of the unauthorized discharge shall be submitted to the Department, within five days of discovery of the discharge. The written report shall contain:

1. A description of the nature and location of the discharge;
2. The cause of the discharge;
3. The date on which the discharge occurred;
4. The length of time that the discharge continued;
5. The volume of the discharge;
6. If the discharge is continuing, how long it is expected to continue;
7. If the discharge is continuing, what the expected total volume of the discharge will be; and
8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this permit.

Discharges reportable to the Department under the immediate reporting requirements of other regulations are exempted from this requirement.

II. Reports of Unusual or Extraordinary Discharges.

If any unusual or extraordinary discharge including a bypass or upset should occur from a treatment works and the discharge enters or could be expected to enter state waters, the permittee shall promptly notify, in no case later than 24 hours, the Department by telephone after the discovery of the discharge. This notification shall provide all available details of the incident, including any adverse effects on aquatic life and the known number of fish killed. The permittee shall reduce the report to writing and shall submit it to the Department within five days of discovery of the discharge in accordance with Part II I 2. Unusual and extraordinary discharges include but are not limited to any discharge resulting from:

1. Unusual spillage of materials resulting directly or indirectly from processing operations;
2. Breakdown of processing or accessory equipment;
3. Failure or taking out of service some or all of the treatment works; and
4. Flooding or other acts of nature.

I. Reports of Noncompliance

The permittee shall report any noncompliance which may adversely affect state waters or may endanger public health.

1. An oral report shall be provided within 24 hours from the time the permittee becomes aware of the circumstances. The following shall be included as information which shall be reported within 24 hours under this paragraph:
 - a. Any unanticipated bypass; and
 - b. Any upset which causes a discharge to surface waters.
2. A written report shall be submitted within 5 days and shall contain:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
 - c. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The Board may waive the written report on a case-by-case basis for reports of noncompliance under Part II I if the oral report has been received within 24 hours and no adverse impact on state waters has been reported.

3. The permittee shall report all instances of noncompliance not reported under Parts II I 1 or 2, in writing, at the time the next monitoring reports are submitted. The reports shall contain the information listed in Part II I 2.

NOTE: The immediate (within 24 hours) reports required in Parts II G, H and I may be made to the Department's Kilmarnock Office at (804) 435-3181 (voice) or (804) 435-0485 (fax). For reports outside normal working hours, leave a message at the Piedmont Regional Office at (804) 527-5020 and this shall fulfill the immediate reporting requirement. For emergencies, the Virginia Department of Emergency Services maintains a 24 hour telephone service at 1-800-468-8862.

J. Notice of Planned Changes.

1. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
 - a. The permittee plans alteration or addition to any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:
 - (1) After promulgation of standards of performance under Section 306 of Clean Water Act which are applicable to such source; or
 - (2) After proposal of standards of performance in accordance with Section 306 of Clean Water Act which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal;
 - b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations nor to notification requirements specified elsewhere in this permit; or
 - c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
2. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

K. Signatory Requirements.

1. Applications. All permit applications shall be signed as follows:
 - a. For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
 - c. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a public agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

K. Signatory Requirements (cont.).

2. Reports, etc. All reports required by permits, and other information requested by the Board shall be signed by a person described in Part II K 1, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Part II K 1;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and
 - c. The written authorization is submitted to the Department.
3. Changes to authorization. If an authorization under Part II K 2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part II K 2 shall be submitted to the Department prior to or together with any reports, or information to be signed by an authorized representative.
4. Certification. Any person signing a document under Parts II K 1 or 2 shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

L. Duty to Comply.

The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the State Water Control Law and the Clean Water Act, except that noncompliance with certain provisions of this permit may constitute a violation of the State Water Control Law but not the Clean Water Act. Permit noncompliance is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this permit has not yet been modified to incorporate the requirement.

M. Duty to Reapply.

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. All permittees with a currently effective permit shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Board. The Board shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

N. Effect of Permit.

This permit does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorize any injury to private property or invasion of personal right, or any infringement of federal, state or local law or regulations.

O. State Law.

Nothing in this permit shall be construed to preclude the institution of any legal action under, or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any other state law or regulation or under authority preserved by Section 510 of the Clean Water Act. Except as provided in permit conditions on "bypassing" (Part II U), and "upset" (Part II V) nothing in this permit shall be construed to relieve the permittee from civil and criminal penalties for noncompliance.

P. Oil and Hazardous Substance Liability.

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Sections 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law.

Q. Proper Operation and Maintenance.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

R. Disposal of solids or sludges.

Solids, sludges or other pollutants removed in the course of treatment or management of pollutants shall be disposed of in a manner so as to prevent any pollutant from such materials from entering state waters.

S. Duty to Mitigate.

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

T. Need to Halt or Reduce Activity not a Defense.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

U. Bypass.

1. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts II U 2 and U 3.
2. Notice
 - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, prior notice shall be submitted, if possible at least ten days before the date of the bypass.
 - b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II I.
3. Prohibition of bypass.
 - a. Bypass is prohibited, and the Board may take enforcement action against a permittee for bypass, unless:
 - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - (3) The permittee submitted notices as required under Part II U 2.
 - b. The Board may approve an anticipated bypass, after considering its adverse effects, if the Board determines that it will meet the three conditions listed above in Part II U 3 a.

V. Upset.

1. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of Part II V 2 are met. A determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is not a final administrative action subject to judicial review.
2. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - b. The permitted facility was at the time being properly operated;
 - c. The permittee submitted notice of the upset as required in Part II I; and
 - d. The permittee complied with any remedial measures required under Part II S.
3. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

W. Inspection and Entry.

The permittee shall allow the Director, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act and the State Water Control Law, any substances or parameters at any location.

For purposes of this section, the time for inspection shall be deemed reasonable during regular business hours, and whenever the facility is discharging. Nothing contained herein shall make an inspection unreasonable during an emergency.

X. Permit Actions.

- * Permits may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Y. Transfer of permits.

1. Permits are not transferable to any person except after notice to the Department. Except as provided in Part II Y 2, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued, or a minor modification made, to identify the new permittee and incorporate such other requirements as may be necessary under the State Water Control Law and the Clean Water Act.
2. As an alternative to transfers under Part II Y 1, this permit may be automatically transferred to a new permittee if:
 - a. The current permittee notifies the Department at least 30 days in advance of the proposed transfer of the title to the facility or property;
 - b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
 - c. The Board does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part II Y 2 b.

Z. Severability.

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY MONITORING
ATTACHMENT D

FACILITY NAME: Omega Protein
ADDRESS: P.O. Box 125, Reedville, Va. 22539

PERMIT NO.: VA0003867

OUTFALL NO.:

| DEQ PAR- AM # | EPA PAR- AM # | CHEMICAL | EPA ANAL- YSIS NO. | QUANTIFI- CATION LEVEL ⁽¹⁾ | REPORT- ING RESULTS | SAM-PL E TYPE ⁽²⁾ | SAMPLE FRE- QUENCY ⁽³⁾ | SPECIFIC TARGET VALUE ⁽⁴⁾ ug/l |
|---------------------|---------------------|--------------------|--------------------------|--|---------------------------|------------------------------------|---|---|
| METALS | | | | | | | | |
| | | Antimony (Dis.) | (5) | (5) | | G | 1/5 YR | 129000 all outfalls |
| | | Arsenic III (Dis.) | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 55.2] [002: 634.8] |
| 440 | 01025 | Cadmium (Dis.) | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 34.4] [002: 279] |
| 023 | 01032 | Chromium VI | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 880] [002: 1500] |
| 442 | 01040 | Copper (Dis.) | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 2.32] [002: 26.68] |
| 405 | 01049 | Lead (Dis.) | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 176] [002: 255] |
| 444 | 71890 | Mercury (Dis.) | (5) | (5) | | G | 1/5 YR | [001,002 004,005, 006: 1.0] [003: 1.68] |
| 445 | 01065 | Nickel (Dis.) | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 60] [002: 249] |
| 446 | 01145 | Selenium (Dis.) | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 240] [002: 2130] |
| 447 | 01075 | Silver (Dis.) | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 1.84] [002: 21.16] |
| 448 | 01092 | Zinc (Dis.) | (5) | (5) | | G | 1/5 YR | [001,003, 004,005, 006: 76] [002: 874] |

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY MONITORING
ATTACHMENT D

FACILITY NAME: Omega Protein
ADDRESS: P.O. Box 125, Reedville, Va. 22539

PERMIT NO.: VA0003867

OUTFALL NO.:

| DEQ PAR- AM # | EPA PAR- AM # | CHEMICAL | EPA ANAL- YSIS NO. | QUANTIFI- CATION LEVEL ⁽¹⁾ | REPORT- ING RESULTS | SAM-PL E TYPE ⁽²⁾ | SAMPLE FRE- QUENCY ⁽³⁾ | SPECIFIC TARGET VALUE ⁽⁴⁾ ug/l |
|-------------------------|---------------------|------------------------------------|--------------------------|--|---------------------------|------------------------------------|---|---|
| PESTICIDES/PCB'S | | | | | | | | |
| 332 | 39330 | Aldrin | 608 | 0.05 | | 3G | 1/5 YR | NA |
| 333 | 39350 | Chlordane | 608 | 0.2 | | 3G | 1/5 YR | NA |
| 334 | 77969 | Chlorpyrifos (Dursban) | 622 | (7) | | 3G | 1/5 YR | NA |
| | | DDD | 608 | 0.1 | | 3G | 1/5 YR | NA |
| | | DDE | 608 | 0.1 | | 3G | 1/5 YR | NA |
| 335 | 39370 | DDT | 608 | 0.1 | | 3G | 1/5 YR | NA |
| 336 | 39560 | Demeton | (6) | (7) | | 3G | 1/5 YR | NA |
| 337 | 39380 | Dieldrin | 608 | 0.1 | | 3G | 1/5 YR | NA |
| | | Endosulfan | 608 | 0.1 | | 3G | 1/5 YR | NA |
| 339 | 39390 | Endrin | 608 | 0.1 | | 3G | 1/5 YR | NA |
| 340 | 39580 | Guthion | 622 | (7) | | 3G | 1/5 YR | NA |
| 341 | 39410 | Heptachlor | 608 | 0.05 | | 3G | 1/5 YR | NA |
| 342 | 77835 | Hexachlorocyclohexane (Lindane) | 608 | 0.05 | | 3G | 1/5 YR | NA |
| | | Kepone | (6) | (7) | | 3G | 1/5 YR | NA |
| 343 | 39530 | Malathion | (6) | (7) | | 3G | 1/5 YR | NA |
| 344 | 39480 | Methoxychlor | (6) | (7) | | 3G | 1/5 YR | NA |
| 345 | 39755 | Mirex | (6) | (7) | | 3G | 1/5 YR | NA |
| 641 | | PCB-1242 | 608 | 1.0 | | 3G | 1/5 YR | NA |
| 642 | | PCB-1254 | 608 | 1.0 | | 3G | 1/5 YR | NA |
| 643 | | PCB-1221 | 608 | 1.0 | | 3G | 1/5 YR | NA |
| 644 | | PCB-1232 | 608 | 1.0 | | 3G | 1/5 YR | NA |
| 645 | | PCB-1248 | 608 | 1.0 | | 3G | 1/5 YR | NA |
| 618 | 39508 | PCB-1260 | 608 | 1.0 | | 3G | 1/5 YR | NA |
| 646 | | PCB-1016 | 608 | 1.0 | | 3G | 1/5 YR | NA |

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY MONITORING
ATTACHMENT D

FACILITY NAME: Omega Protein
ADDRESS: P.O. Box 125, Reedville, Va. 22539

PERMIT NO.: VA0003867

OUTFALL NO.:

| DEQ PAR- AM # | EPA PAR- AM # | CHEMICAL | EPA ANAL- YSIS NO. | QUANTIFI- CATION LEVEL ⁽¹⁾ | REPORT- ING RESULTS | SAM-PL E TYPE ⁽²⁾ | SAMPLE FRE- QUENCY ⁽³⁾ | SPECIFIC TARGET VALUE ⁽⁴⁾ (ug/l) |
|----------------------------------|---------------------|---|--------------------------|--|---------------------------|------------------------------------|---|---|
| 349 | 39400 | Toxaphene | 608 | 5.0 | | 3G | 1/5 YR | NA |
| 647 | | 2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex) | (6) | (7) | | 3G | 1/5 YR (PWS) | NA |
| BASE NEUTRAL EXTRACTABLES | | | | | | | | |
| | | Acenaphthene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 275 | 34222 | Anthracene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 276 | 34526 | Benzo(a)anthracene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 648 | | Benzo(b)fluoranthene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 278 | 34242 | Benzo(k)fluoranthene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 277 | 34247 | Benzo(a)pyrene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| | | Butyl benzyl phthalate | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 282 | 34320 | Chrysene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 654 | | Dibenz(a,h)anthracene | 625 | 20.0 | | 3G | 1/5 YR | NA |
| | | Dibutyl phthalate | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 259 | 34536 | 1,2-Dichlorobenzene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 264 | 34566 | 1,3-Dichlorobenzene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 266 | 34571 | 1,4-Dichlorobenzene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| | | Diethyl phthalate | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 170 | | Di-2-Ethylhexyl Phthalate | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 239 | 34611 | 2,4-Dinitrotoluene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 287 | 34376 | Fluoranthene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 288 | 34381 | Fluorene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 651 | | Indeno(1,2,3-cd)pyrene | 625 | 20.0 | | 3G | 1/5 YR | NA |
| 650 | | Isophorone | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 293 | 34696 | Naphthalene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 296 | 34469 | Pyrene | 625 | 10.0 | | 3G | 1/5 YR | NA |
| | | 1,2,4-Trichlorobenzene | 625 | 10.0 | | 3G | 1/5 YR | NA |

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY MONITORING
ATTACHMENT D

FACILITY NAME: Omega Protein
ADDRESS: P.O. Box 125, Reedville, Va. 22539

PERMIT NO.: VA0003867

OUTFALL NO.:

| DEQ PAR- AM # | EPA PAR- AM # | CHEMICAL | EPA ANAL- YSIS NO. | QUANTIFI- CATION LEVEL ⁽¹⁾ | REPORT- ING RESULTS | SAM-PL E TYPE ⁽²⁾ | SAMPLE FRE- QUENCY ⁽³⁾ | SPECIFIC TARGET VALUE ⁽⁴⁾ ug/l |
|---------------------------|---------------------|--------------------------|--------------------------|--|---------------------------|------------------------------------|---|---|
| VOLATILES | | | | | | | | |
| 216 | 34030 | Benzene | 624 | 10.0 | | G | 1/5 YR | NA |
| 484 | 32104 | Bromoform | 624 | 10.0 | | G | 1/5 YR | NA |
| 236 | 32102 | Carbon Tetrachloride | 624 | 10.0 | | G | 1/5 YR | NA |
| 652 | | Chlorodibromomethane | 624 | 10.0 | | G | 1/5 YR | NA |
| 223 | 32106 | Chloroform | 624 | 10.0 | | G | 1/5 YR | NA |
| 649 | | Dichloromethane | 624 | 20.0 | | G | 1/5 YR | NA |
| 244 | 79603 | Dichlorobromomethane | 624 | 20.0 | | G | 1/5 YR | NA |
| 260 | 34531 | 1,2-Dichloroethane | 624 | 10.0 | | G | 1/5 YR | NA |
| | | 1,1-Dichloroethylene | 624 | 10.0 | | G | 1/5 YR | NA |
| 172 | 34371 | Ethylbenzene | 624 | 10.0 | | G | 1/5 YR | NA |
| 653 | | Monochlorobenzene | 624 | 50.0 | | G | 1/5 YR | NA |
| 220 | 34475 | Tetrachloroethylene | 624 | 10.0 | | G | 1/5 YR | NA |
| 222 | 34010 | Toluene | 624 | 10.0 | | G | 1/5 YR | NA |
| 155 | 39180 | Trichloroethylene | 624 | 10.0 | | G | 1/5 YR | NA |
| 173 | 39175 | Vinyl Chloride | 624 | 10.0 | | G | 1/5 YR | NA |
| ACIDS EXTRACTABLES | | | | | | | | |
| | | 2-Chlorophenol | 625 | 10.0 | | 3G | 1/5 YR | NA |
| | | 2,4 Dichlorophenol | 625 | 10.0 | | 3G | 1/5 YR | NA |
| | | 2,4 Dimethylphenol | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 210 | 39032 | Pentachlorophenol | 625 | 50.0 | | 3G | 1/5 YR | NA |
| 175 | 46000 | Pheno ⁽⁶⁾ | 625 | 10.0 | | 3G | 1/5 YR | NA |
| 602 | 34621 | 2,4,6-Trichlorophenol | 625 | 10.0 | | 3G | 1/5 YR | NA |
| MISCELLANEOUS | | | | | | | | |
| 039 | 00610 | Ammonia as NH3-N | 350.1 | 200 | | C | 1/5 YR | NA |
| 005 | 50060 | Chlorine, Total Residual | (6) | 100 | | G | 1/5 YR | NA |
| 018 | 00720 | Cyanide | 335.2 | 10.0 | | G | 1/5 YR | NA |

DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY MONITORING
ATTACHMENT D

FACILITY NAME: Omega Protein
ADDRESS: P.O. Box 125, Reedville, Va. 22539

PERMIT NO.: VA0003867

OUTFALL NO.:

| DEQ PAR- AM # | EPA PAR- AM # | CHEMICAL | EPA ANAL- YSIS NO. | QUANTIFI- CATION LEVEL ⁽¹⁾ | REPORT- ING RESULTS | SAM-PL E TYPE ⁽²⁾ | SAMPLE FRE- QUENCY ⁽³⁾ | SPECIFIC TARGET VALUE ⁽⁴⁾ ug/l |
|---------------------|---------------------|---------------------------------------|--------------------------|--|---------------------------|------------------------------------|--|---|
| | | Fecal Coliform N/CML) | (6) | (7) | | G | 1/5 YR | NA |
| 137 | 00900 | Hardness (as mg/l CaCO ₃) | (6) | (7) | | C | 1/5 YR | NA |
| | | Hydrogen Sulfide | (6) | (7) | | G | 1/5 YR | NA |
| | | Nitrate (as mg/l N) | (6) | (7) | | C | 1/5 YR | NA |
| 350 | 30340 | Tributyltin ⁽⁹⁾ | NSB 85-3295 | (7) | | C | 1/5 YR if believed present by permittee | NA |
| 252 | 81551 | Xylenes (total) | SW 846 Method 8020 | (7) | | G | 1/5 YR | NA |

Name of Principal Exec. Officer or Authorized Agent / Title

Signature of Principal Officer or Authorized Agent / Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. §1001 and 33 U.S.C. §1319. (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)

- (1) Quantification level (QL) is defined as the lowest concentration used for the calibration of a measurement system when the calibration is in accordance with the procedures published for the required method.

Units for the quantification level and the specific target value are micrograms/liter unless otherwise specified.

Quality control and quality assurance information shall be submitted to document that the required quantification level has been attained.

- (2) Sample Type

G = Grab = An individual sample collected in less than fifteen (15) minutes. Substances specified with "grab" sample type shall only be collected as grabs. The permittee may analyze multiple grabs and report the average results provided that the individual grab results are also reported.

3G = 1 Grab Sample every 8 hours. The permittee shall analyze each sample individually. The results may be averaged provided that the individual grab results are also reported.

C = Composite = A 24-hour composite unless otherwise specified. The composite shall be a combination of individual samples, taken proportional to flow, obtained at hourly or smaller time intervals. The individual samples may be of equal volume for flows that do not vary by +/- 10 percent over a 24-hour period. For composite metals samples, the individual sample aliquots shall be filtered and preserved immediately upon collection and prior to compositing.

- (3) Frequency

1/5 YR = once after the start of the third year from the permit's effective date

X = no monitoring required

- (4) Specific Target Value is the approximate value that may initiate a wasteload allocation analysis. Target values are not wasteload allocations or effluent limitations. The specific target values are subject to change based on additional information such as hardness data, receiving stream flow and design flows.

- (5) A specific analytical method is not specified. An appropriate method shall be selected from the following list of EPA methods (or any approved method presented in 40 CFR Part 136) which will achieve a quantification level that is less than the indicated specific target value for each metal. If the test result is less than the specified specific target value, a "<[QL]" shall be reported where the actual analytical test QL is substituted for [QL].

| Metal | Analytical Methods |
|-------------|---|
| Antimony | 204.1; 200.7; 204.2; 1639; 1638; 200.8 |
| Arsenic | 200.7; 200.9; 200.8; 1632 |
| Barium | 208.1; 200.7; 208.2; 200.8 |
| Cadmium | 213.1; 200.7; 213.2; 200.9; 200.8; 1638; 1639; 1637; 1640 |
| Chromium* | 218.1; 200.7; 218.2; 218.3; 200.9; 1639; 200.8 |
| Chromium VI | 218.4; 1636 |
| Copper | 220.1; 200.7; 220.2; 200.9; 1638; 1640; 200.8 |
| Iron | 236.1; 200.7; 236.2 |
| Lead | 239.1; 200.7; 239.2; 200.9; 200.8; 1638; 1637; 1640 |
| Manganese | 243.1; 200.7; 200.9; 243.2; 200.8 |
| Mercury | 200.7; 245.1; 200.8; 1631 |
| Nickel | 249.1; 200.7; 249.2; 1639; 200.9; 1638; 200.8; 1640 |
| Selenium | 200.7; 270.2; 200.8; 1638; 1639; 200.9 |
| Silver | 272.1; 200.7; 200.9; 272.2; 1638; 200.8 |
| Zinc | 289.1; 200.7; 1638; 1639; 200.8; 289.2 |

* Chromium III is measured by the total chromium analysis. If the result of the total chromium analysis is less than or equal to the QL (or specific target value), the result for chromium III can be reported as less than QL.

- (6) Any approved method presented in 40 CFR part 136.
- (7) The QL is at the discretion of the permittee. For any substances addressed in 40 CFR Part 136, the permittee shall use one of the approved methods in 40 CFR Part 136.
- (8) Requires continuous extraction.
- (9) DEQ's approved analysis for TBT may also be used [See A Manual for the Analysis of Butyltins in Environmental Systems by the Virginia Institute of Marine Science dated November 1996].

VPDES PERMIT PROGRAM FACT SHEET

This document gives pertinent information concerning the modification of the VPDES permit listed below. This permit is being processed as a major industrial permit. Omega Protein, formerly Zapata Protein, Inc., processes menhaden by cooking the fish, pressing and separating the oil and solids, and evaporating the water to leave fish meal and oil. The 001 discharge to Cockrell's Creek results from the operation of contact cooling water for the air pollution scrubbers. The 002 discharge to Cockrell's Creek results from the operation of the aerated lagoons for treating the fish condensate. The 003 discharge results from the barge disposal of fish condensate in designated area of the Chesapeake Bay. This method of disposal has not been used in over 15 years, but it is retained in case of emergency. The 004 discharge is non-contact cooling water for the evaporators used in the processing of the fish condensate. 005 is a new non-contact cooling water discharge from the new evaporator, placed online September, 1998. 006 is a combined contact cooling water and non-contact cooling water outfall that is planned for the winter of 2000; it will combine 001+004+005 and provide aeration to decrease ammonia. The refrigeration water is the chilled water from the hold of the ships which cools the fish until they are unloaded at the dock. The ships then dispose of the water east of a line between Fletton Point Light and Black Can Buoy No. 3. In 1997, Zapata Protein bought Ampro Fisheries, another menhaden fishing operation, located across the Creek in Fairport. Ampro Fisheries was shut down. With this modification, Zapata, now Omega, has asked to incorporate Ampro's wasteload allocation in Cockrell's Creek with Omega's permit limitations. Limitations for ammonia and cyanide have been reevaluated in the modification in accordance with new guidance and new mixing analyses of Cockrell's Creek and the barge discharge to Chesapeake Bay.

1. Facility Name and Address: SIC Code: 2077

Omega Protein
P.O. Box 175
Reedville, Va. 22539

Location: VSH 659, Reedville, Va. 22539
2. Permit No. VA0003867 Expiration Date: December 17, 2002
3. Owner Contact: Name: Steve Jones
Title: General Manager
Telephone #: 804-453-4211
4. Permit Drafted By: D. M. Mosca Date: April 20, 1999

DEQ Regional Office: Kilmarnock Field Office of Piedmont Regional Office

Reviewed by: Ray Jenkins Date: May 26, 1999 and Sept. 25, 1999
Date: _____
5. Receiving Waters Classification:

Receiving Stream: Cockrell's Creek
Basin: Chesapeake Bay/Atlantic/Small Coastal
Subbasin: N/A
Section: 2 Class: II
Special Standards: a, NEW-20
7-Day, 10-Year Low Flow: (N/A: Saltwater)

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

- | | |
|--|---|
| <input checked="" type="checkbox"/> State Water Control Law | <input checked="" type="checkbox"/> Clean Water Act |
| <input checked="" type="checkbox"/> Permit Regulation (DEQ VPDES Regulation) | <input checked="" type="checkbox"/> EPA Guidelines |
| <input checked="" type="checkbox"/> EPA NPDES Regulation (Federal Register) | <input checked="" type="checkbox"/> Water Quality Standards |
| <input type="checkbox"/> Other (explain) _____ | |

7. Licensed Operator Requirements: Class III

8. Reliability Class Designation: None (not a sewage discharge)

9. Permit Characterization: (Check as many as necessary)

- | | |
|---|---|
| <input checked="" type="checkbox"/> Private | <input checked="" type="checkbox"/> Effluent Limited* |
| <input type="checkbox"/> Federal | <input checked="" type="checkbox"/> Water Quality Limited** |
| <input type="checkbox"/> State | <input checked="" type="checkbox"/> Toxics Monitoring Program Required*** |
| <input type="checkbox"/> POTW | <input type="checkbox"/> Pretreatment Program Required**** |
| | <input type="checkbox"/> Possible Interstate Effect |
| | <input checked="" type="checkbox"/> Compliance Schedule Required |
| | <input type="checkbox"/> Interim Limits in Permit |
| | <input type="checkbox"/> Interim Limits in Other Document |

* EPA has established effluent guidelines for selected industries: see the list of effluent guidelines found in Permit Regulations for numbers and names. Also see the BNA book.

** See the WQ Standards for applicable standards and criteria.

*** For applicants who need a TMP when they meet any conditions as listed on Appendix II, Guidelines for Application of TMP.

**** See the Pretreatment Manual if they have industrial discharges into a municipal POTW.

10. Attach a schematic of Wastewater Treatment System(s), and provide a general description of the production cycle(s) and activities of the facility.

See attached. This facility processes menhaden when available during the months of March through December.

11. Discharge(s) Location Description: Provide USGS Topo which indicates the discharge location, significant (large) dischargers to the receiving stream, water intakes, and other items of interest.

Name of Topo: Reedville

12. Discharge Description: See Table I.

13. Receiving Waters Information: (This narrative is from the 1992 VWCB 305b Report to Congress, with updates from more recent reports in brackets):

The Cockrell's Creek waterbody encompasses the area southeast and east of Lilian on Rte. 360 to the

confluence with Ingram Bay and Chesapeake Bay, including Cockrell Creek's and numerous unnamed coves. This waterbody is classified as effluent limited.

The VWCB (now DEQ) maintains an AWQM station near Reedville (COC001.61). The data from the current reporting period exhibited no violations of dissolved oxygen, pH, temperature, or fecal coliform bacterial standards over a 10% rate. [The 1994 report also shows none of these violations; the 1996 report shows one D.O. and one fecal coliform violation.] Historically, this station has shown low dissolved oxygen levels, which have been attributed to seasonal problems. However, during this reporting period, only 5% of the samples violated the standard. Copper was found in water column samples above the chronic criterion.

Note: AWQM sampling for metals has been in the total recoverable form; the water quality standards and wasteload allocations are based on dissolved metals. DEQ's guidance from 93-015 states that there is no general relationship in the stream or in the effluent between total recoverable metals and dissolved metals (other than what can be determined via a site specific chemical translator study). Therefore, total recoverable metals data should not be used to establish a permit limit to represent dissolved metals. The necessity for a limit may be ruled out using total recoverable data, however. The 1994 and 1996 reports do not indicate any metals violations. Using the DEQ current guidance, the statement that sampling data show metals violations in Cockrell Creek's in 1992 was most likely incorrect.

Shellfish condemnations impact 826 acres. The closures are associated with the buffer zone surrounding the discharge from the Town of Reedville WWTP and non-point source pollutants. Four seafood facilities also discharge to Cockrell's Creek.

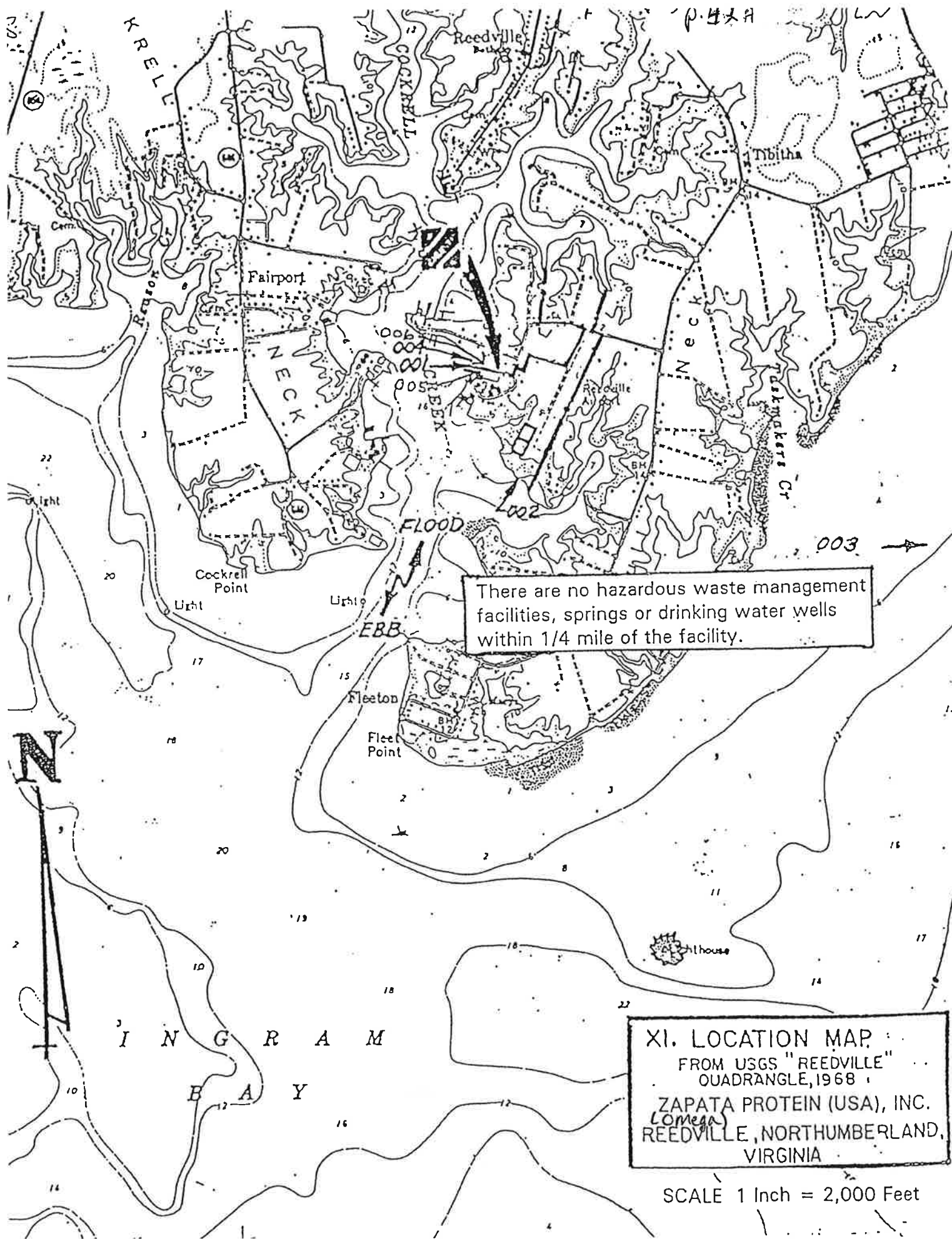
Note: Two seafood fish-packing facilities, Pride of Virginia and Reedville Menhaden presently discharge to Cockrell's Creek, in addition to the menhaden plant.

The CWA fishable goal for this waterbody, which covers 1.29 square miles of surface water, is partially supported for the entire waterbody. The swimmable goal is fully supported for the entire waterbody.

In addition to the information about Cockrell's Creek, the Chesapeake Bay is the discharge location for outfall 003 and refrigeration water. The 003 wastewater is barged out to a designated quadrant in the Bay, diluted with seawater, and discharged below the barge. This method of disposal has not been used in over 15 years, but it is retained in case of emergency. Sufficient dilution is possible provided the barge discharge pumps dilute the wastewater with seawater such that no water quality violations are expected. Refrigeration water is used to cool the fish as they are brought to the plant for processing. After the ships drop off their menhaden catch, they head back out to fish. Once they reach a point east of a line between Fleeton Point Light and Black Can Buoy No. 3, they discharge the refrigeration water in compliance with water quality standards while the vessel is underway and at such a rate that the discharge is not visible.

14. Effluent Screening: See Tables III-VII. If available, reference the specific chemical data used in the mass balance and the specific identifying information (lab sheet number, lab data, etc.).
15. Effluent Limitations: Include all calculations used for each outfall and set of effluent limits. See Tables II and VIII-XI. Justification for variances and modifications must be addressed in this Section. Also, attach calculations used in the model(s) to this fact sheet. Provide a rationale for limiting internal wastestreams and indicator pollutants.
16. Special Conditions: Give a brief rationale for any special conditions contained in the permit (pretreatment information, toxic pollutants, TMP rationale, etc.).

- B.1. Quantification Levels for Toxic Parameters--from Quantification Guidance dated August, 1999. States are authorized to establish monitoring methods and procedures to compile and analyze data on water quality, as per 40 CFR Part 130, Water Quality Planning and Management, subpart 130.4.
- B.2. Bay Discharge (003) Requirements - based on the previous permit. Monitoring required to ensure discharges meet water quality standards.
- B.3. Refrigeration Water Discharge Requirements - based on the previous permit. Monitoring required to ensure discharges meet water quality standards.
- B.4. Industrial Reopener - Rationale: Required to implement 9 VAC 25-31-220, §C. 40 CFR 122.44 requires all permits for primary industry categories to include the requirements of Section 307(a)(2) of the Clean Water Act.
- B.5. Notification levels of Toxics - Rationale: Required in permits by 96-004 for existing manufacturing, commercial, mining, and silvicultural dischargers).
- B.6. Waste Storage Special Condition. Rationale: 9 VAC 25-31-50, §A. prohibits the discharge of any wastes into State waters unless authorized by permit. State Water Control Law §62.1-44.18:2 authorizes the Board to prohibit any waste discharge which would threaten public health or safety, interfere with, or be incompatible with treatment works or water use. Section 301 of the Clean Water Act prohibits the discharge of any pollutant unless it complies with specific sections of the Act.
- B.7. Nutrient Enriched Waters. Rationale: 9 VAC 25-40, Policy for Nutrient Enriched Waters, allows reopening of permits if total phosphorus and total nitrogen in a discharge potentially exceed specified concentrations. The policy also anticipates that future nutrient limits may be needed to control aquatic plants.
- B.8. Operations and Maintenance Manual. Rationale: 9 VAC 25-31-190, §E. and 40 CFR 122.41(e) require proper operation and maintenance of the permitted facility. Compliance with an approved O&M manual ensures this. Section 401 of the Clean Water Act requires the permittee to provide opportunity for the State to review the proposed operations of the facility.
- B.9. Requirement for Class III Operator. The VDH/SWCB Sewerage Regulations specify a manning and classification schedule of wastewater treatment plant operators, based on plant capacity and specific treatment types. The Code of Virginia 54.1-3200 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators, requires licensure of operators.
- B.10. Submittal of Item V and VI of Form 2C for outfall 005, or alternatively, 006. This is required because the outfall was not in operation for the collection of representative samples when the application was submitted.
- B.11. Best Management Practices: Off Season Maintenance Area. Because this facility scrapes and paints boats, the shipyard BMPs have been added to this permit, along with a reporting form (Attachment C).
- B.12. Water Quality Standards Monitoring. State Water Control Law 62.1-44.21 authorized the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. If modifications to secondary treatment requirements are proposed, 40 CFR Part 125, Criteria and Standards for the NPDES, subpart 125.62 requires the establishment of a monitoring program. Water Quality Standards Reopener. VR 680-14-01, Section 2.5. E. Water Quality Standards dictates that permits shall include limits to prevent violations of water quality standards. CFR Part 131, Water Quality Standards, requires the State to adopt water quality criteria to protect designated water uses (subpart 131.11), and review, modify and adopt water quality standards periodically (subpart 131.20). Section 302 of the Clean water Act authorizes effluent limitations to be established which will contribute to the attainment or maintenance of the water quality.



There are no hazardous waste management facilities, springs or drinking water wells within 1/4 mile of the facility.

XI. LOCATION MAP
FROM USGS "REEDVILLE"
QUADRANGLE, 1968
ZAPATA PROTEIN (USA), INC.
(Omega)
REEDVILLE, NORTHUMBERLAND,
VIRGINIA

SCALE 1 Inch = 2,000 Feet

Betsy Ziomek, QA/QC Officer for DEQ, advised me that because organics can stick to the side of the compositor, 3 grabs over the 24 hr. operations cycle would be better than the composite sample recommended in the current 93-015 guidance update document for pesticides/pcbs, base neutrals extractables and acids extractables.

- B.13. Compliance Schedule for Ammonia Limitation at Outfall 001/006, 002 and 003 and Cyanide at 001/006. Per 93-015, if the permit action is a reissuance or a modification, and a water quality based limit is incorporated into the permit for the first time, then a schedule of compliance for meeting the new limit may be incorporated into the permit. This is carried over from the permit reissued December 17, 1997.
 - B.14. Multiport Diffuser at 002. Omega has indicated that they will construct a multiport diffuser at outfall 002. The construction must be approved and the device in place prior to December 17, 2001 as part of plans for the facility to meet its compliance schedule (see B.11).
 - B.15. Monthly Average and Daily Maximum Compliance. States are authorized to establish monitoring methods and procedures to compile and analyze data on water quality, as per CFR Part 130, Water Quality Planning and Management, subpart 130.4. Consistency in how this is to be accomplished is critical.
 - C.1. Toxics Management Program. Outfall 001/006: This condition is required based on the Applicability Criteria of the Toxics Management Regulation. The daily maximum wastewater flow from these outfalls is greater than 50,000 gallons per day and a reasonable potential for toxicity exists in the wastewater as this outfall contains contact cooling water, which comes in contact with the dryer scrubbers. Outfall 002 (treated wastewater from lagoon) has completed a Toxicity Reduction Evaluation (TRE), and a Whole Effluent Toxicity (WET) limit has been applied in accordance with the recommendation made September 10, 1997 by Mason Harper. Outfall 003, the barge discharge, has not been used since before 1989; however, since the treated wastewater has been shown to be potentially toxic, the untreated wastewater barged out to the Bay may also be potentially toxic, a requirement for TMP testing to begin has been included should this outfall be used. It has been demonstrated through quarterly testing over the 1992-1997 permit term that Outfall 004 (Non-contact cooling water) is not acutely or chronically toxic, so TMP requirements have been dropped for this outfall in the permit reissued December 17, 1997. Because the new 005 outfall will also consist of the same noncontact cooling water, a TMP requirement has not been imposed on it. However, when it is combined with 001 and 004 as outfall 006, the annual TMP requirement that was imposed upon 001 will remain.
17. List the type and quantity of wastes, fluids, or pollutants being stored at this facility. Briefly describe the storage facilities and list, if any, measures taken to prevent the stored material from reaching State waters.
- A. Marine Paints for touchup work on the menhaden boats. Brushwork only, instead of spraying, is done at this facility.
 - B. Sulfuric Acid for the scrubbers. The acid is stored so that it does not come in contact with stormwater or wastewater.
 - C. Oils in ASTs. These are stored inside bermed areas in case of leakage of one of the tanks.
18. Table XIII is to be used to record changes in the permit (1) from the previously issued permit and/or (2) during the permit processing period.

Special Conditions: (List any changes associated with the special conditions and the reasons for the changes).

- Condition 1. Quantification Levels. Required by updated Quantification Level guidance dated August, 1999.
- Condition 2. Pump Rate/Barge Speed. These were developed by Ampro with the aid of a marine architect in order to provide the appropriate amount of mixing so that the waste is disposed of by the barge in a manner that is not toxic.
- Condition 4. Industrial Reopener. Standard language has changed.
- Condition 6. Addition of standard permit condition per OWPS guidance.
- Condition 7. Storage Condition is new to this reissuance; permit manual requires addition.
- Condition 9. Licensed Wastewater operator. Standard language has been updated.
- Condition 10. Condition for Form 2C Section V and VI for Outfall 005 or 006 to complete the application.
- Condition 12. Water Quality Standards Monitoring Condition was new to the 1997 reissuance; the permittee is to collect data during the current permit cycle so the need for limits may be evaluated at the next permit reissuance. The language and analysis frequency has been updated in this modification in accordance with the most recent guidance and extended to include outfall 005 and 006. Also, target values for metals have been updated in accordance with final Attachment A guidance from Central Office dated August 25, 1999.
- Condition 13. Proposed outfall 006 has been added to the schedule of compliance for ammonia and cyanide.

Table I
NUMBER AND DESCRIPTION OF DISCHARGES
(Complete this item or attach page one of Form 2C)

| OUTFALL NUMBER AND LOCATION | SOURCE OF DISCHARGE (LIST OPERATION CONTRIBUTING FLOW) | TREATMENT (BRIEF DESCRIPTION UNIT BY UNIT) | FLOW AVERAGE/MAXIMUM (GIVE AVG & MAX FOR INDUSTRY & DESIGN FOR MUNICIPAL) |
|---|--|---|--|
| 001 Cockrell's Creek | Processing Menhaden: Contact Cooling water from Dryer Scrubbers; Emergency Discharge of Evaporation Condensate | Evaporation | 5.0 MGD average and long term average flow; 7.17 MGD maximum flow |
| 002 Cockrell's Creek | Processing Menhaden: the aerated lagoon treatment of the condensate. | Aeration, detention | 0.3 MGD average flow, 0.26 MGD long term avg flow; 0.468 MGD maximum flow |
| 003 Chesapeake Bay | Processing Menhaden: Evaporation Condensate. | Evaporation | 0.3 MGD long term avg. flow, 0.4 MGD max (measured in barge-fuls of condensate, at 0.2 MGD per barge) |
| 004 Cockrell's Creek | Processing Menhaden: Non-contact Cooling water from Evaporation Units | Evaporation | 8.6 MGD average flow; 12.4 MGD maximum flow |
| 005 Cockrell's Creek | Processing Menhaden: Non-contact Cooling water from Evaporation Units (new unit) | Evaporation | Average flow 10.32 MGD; 12.9 MGD maximum flow |
| 006 Cockrell's Creek | Processing Menhaden: Combined Contact and Non-contact Cooling Water; Emergency Discharge of Evaporation Condensate | Evaporation | Average flow 23.92 MGD; 32.47 MGD maximum flow--will not be a new flow, combines 001+004+005 |
| East of Fleeton Point Light and Black Can Buoy #3 | refrigeration water (from ships) | none | unknown: subject to criteria that the discharge be made while the ship is underway and at a rate such that the discharge is not visible. |
| Stormwater handled by General Permit | Stormwater Monitoring at Outfall 001 | none | Unknown at this time: monitored under general permit |

Bailwater is creekwater used to transfer the fish off the boat hydraulically to shore at the dock. The bailwater goes through the process so what water is not evaporated discharged through outfall 001.

The boat engines require cooling water and a discharge of the engine cooling water may be seen at the dock if the engines are running waiting to unload the fish catch.

Stickwater is wastewater from the fish cooker that has been pressed and centrifuged. It consists of 10 percent solids. It is further evaporated to condensate, which is percent solids. The condensate is treated with the aerated lagoon and discharged to Cockrell's Creek at outfall 002 or may be barged to 003 (though the 003 outfall has been used in over 15 years).

| Omega Protein Calculation of Conventional Limits <i>Table 11</i> | | | | | | | | |
|---|--|--|--|--|---|--|---|--|
| Production (from 2C Application) 3,200,000 Kg: Calculation of Technology Limits for 001, 002, 003 | | | | | | | | |
| *Long Term Average Loadings Used from 2C application: | | | Scrubber 001 5 MGD 698 kg/d BOD Long Term Avg 416 kg/d TSS, 101 kg/d O&G | | Lagoon 002 0.26 MGD 186 kg/d BOD Long Term Avg 109 kg/d TSS, 7.5 kg/d O&G | | Barge 003 0.3 MGD 464 kg/d BOD Long Term Avg 12.8 kg/d TSS, 23.1 kg/d O&G | |
| | Multiplier K/KKG | Total Kg/D = (Production x multiplier/1000) | | Kg/D total x (proportion 001 loading/total loading) | | Kg/D total x (proportion 002 loading/total loading) | | Kg/D total x (proportion 003 loading/total loading) |
| BOD ₅ | Avg 3.0 | 12480 | 001 BOD Loading/Total Loading = 698/1348 = 0.5178 | 12480 x .5178 = 6402 Kg/d | 002 BOD Loading/Total Loading = 186/1348 = 0.1380 | 1722 Kg/d | 003 BOD Loading/Total Loading = 464/1348 = 0.3442 | 4296 Kg/d |
| Total BOD Loading* = 698 + 186 + 464 = 1348 kg/d | Max 7.0 | 22400 | | 22400 x .5178 = 11599 | | 3091 | | 7710 |
| TSS | Avg 1.5 | 4800 | 001 TSS Loading/Total Loading = 0.7735 | 3713 | 002 TSS Loading/Total Loading = 0.2027 | 973 | 003 TSS Loading/Total Loading = 0.0238 | 114 |
| Total TSS Loading* = 416 + 109 + 12.8 = 538 kg/d | Max 3.7 | 11,840 | | 9158 | | 2400 | | 282 |
| O&G | Avg 0.76 | 2,432 | 001 O&G Loading/Total Loading = 0.7652 | 1861 | 002 O&G Loading/Total Loading = 0.0568 | 138 | 003 O&G Loading/Total Loading = 0.1750 | 426 |
| Total O&G Loading* = 101 + 7.5 + 23.1 = 132 Kg/d | Max 1.4 | 4,480 | | 3428 | | 254 | | 784 |
| HOWEVER, WQS DICTATE TOTAL ALLOWABLE BOD DISCHARGE TO CREEK IS 4900 LB/DAY AFTER THE WLA FOR THE REEDVILLE WWTP HAS BEEN SUBTRACTED. FRED CUNNINGHAM'S FACT SHEET DATED 8/29/84 ALLOWED A TOTAL OF 2222 KG/D. THIS HAS BEEN ALLOCATED IN ITS ENTIRETY TO OMEGA PROTEIN WITH THIS PERMIT MODIFICATION. | | | | | | | | |
| THEREFORE THE SUM OF BOD FOR 001 AND 002, THE TWO PROCESS OUTFALLS DISCHARGING TO CREEK, CANNOT EXCEED 2222 KG/D, AND WQS LIMITS APPLY TO THESE 2 OUTFALLS. 003 IS LIMITED BY TECHNOLOGY LIMITS. | | | | | | | | |
| | | Kg/d Total Wasteload Allocation 001+002 | Scrubber 001 5 MGD | | Lagoon 002 0.26 MGD | | | |
| BOD ₅ | Avg | 2222 * | 001 BOD Loading/Total Loading = 0.7896 | 2222 x .7896 = 1754 * | 002 BOD Loading/Total Loading = 0.2104 | | 468 Kg/d | |
| Total BOD Loading* = 698 + 186 = 884 kg/d | Max 2222 kg/d x (7.0/3.9) Mo. Max. Calculation: (Mo Avg. Kg/D multiplied by ratio of max/avg multiplier) | 3989 * | | 3989 x .7896 = 3150 * | | | 839 * | |
| TSS | Avg 2222 Kg/D x (1.5/3.9) Ratio TSS Avg/BOD Avg Multipliers | 855 * | 001 TSS Loading/Total Loading = 0.7924 | 855 x .7924 = 678 * | 002 TSS Loading/Total Loading = 0.2076 | | 177 * | |
| Total TSS Loading* = 416 + 109 = 525 kg/d | Max 2222 kg/d x (3.7/7.0) Ratio TSS Max/BOD Max Multipliers | 1,174 * | | 930 * | | | 244 * | |
| O&G | Avg 2222 Kg/d x (.76/3.9) Ratio O&G Avg/BOD Avg Multipliers | 433 * | 001 O&G Loading/Total Loading = 0.9309 | 403 * | 002 O&G Loading/Total Loading = 0.0691 | | 29.9 * | |
| Total O&G Loading* = 101 + 7.5 = 108.5 Kg/d | Max 2222 kg/d x (1.4/7.0) Ratio O&G Max/BOD Max Multipliers | 444 * | | 413 * | | | 30.7 * | |

* Revised - see Table 11A

Table IIA

Omega Protein Permit Limits Calculation 11-9-99

TSS and O&G Max Value Calculations-- Revisions to Table II

TSS and O&G Max values should have been calculated by multiplying max multiplier ratios by the max BOD value, not the avg value. This resulted in max values for 001 and 002 (and the proposed 006) that were too low.

TSS calculation

$$3989 \text{ kg/d} * (3.7 \text{ TSS max multiplier} / 7.0 \text{ BOD max multiplier}) = 2108$$

O&G Calculation

$$3989 \text{ kg/d} * (1.4 \text{ O\&G max multiplier} / 7.0 \text{ BOD max multiplier}) = 798$$

Comparison of Calculated Values to Previously Permitted Limits

WQ Limits from Previous Permits--Zapata and Ampro: 001+002

| | | Zapata | Ampro | Total | New Rev. Omega limits | Use (Total or New Lim) |
|-----|-----|--------|-------|-------|--------------------------|---------------------------|
| BOD | AVG | 1356 | 867 | 2223 | 2222 | 2223 |
| | MAX | 2427 | 1552 | 3979 | 3989 | 3979 |
| TSS | AVG | 504 | 322 | 826 | 855 | 826 |
| | MAX | 1239 | 792 | 2031 | 2108 | 2031 |
| O&G | AVG | 244 | 156 | 400 | 433 | 400 |
| | MAX | 449 | 287 | 736 | 798 | 736 |

Since the Values in the Use Column above represent the sum of 001+ 002, the next step is to split the sum into separate outfall values using the (outfall loading)/(total loading) proportions found in Table II

| Outfall 001 | | Outfall 002 | |
|-------------|----------------------|-----------------|------|
| BOD avg | 2223 * 0.7896 = 1755 | 2223 * 0.2104 = | 468 |
| max | 3979 * 0.7896 = 3142 | 3979 * 0.2104 = | 837 |
| | | | |
| TSS avg | 826 * 0.7924 = 655 | 826 * 0.2076 = | 171 |
| max | 2031 * 0.7924 = 1609 | 2031 * 0.2076 = | 422 |
| | | | |
| O&G avg | 400 * 0.9309 = 372 | 400 * 0.0691 = | 27.6 |
| max | 736 * 0.9309 = 685 | 736 * 0.0691 = | 50.9 |

Table III

EVALUATION OF EFFLUENT CHARACTERIZATION DATA--The only new data received for evaluation has been ammonia and cyanide, therefore these were the only two parameters evaluated for the permit modification. Evaluation of other parameters has been carried over from 12/97 permit reissuance.

Outfall 001

Receiving Stream: Hardness: NA (Saltwater Limits apply)

Flow: 5.0 MGD

| PARAMETER | EFFLUENT CONCEN- TRATION ug/1 | VIRGINIA ACUTE CRITERIA SALTWATER ug/1 | VIRGINIA CHRONIC CRITERIA SALTWATER ug/1 | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|------------------------------|---|--|--|---|--------------------------------|---|
| | | | | AVG FLOW | | Data from 2C application evaluated and all units ug/l, unless otherwise specified |
| | | | | Acute (WLA _a) | Chronic (WLA _c) | *Measured as Dissolved species |
| | | | | | | Acute (WLA _a) is calculated as follows: 2x acute standard for estuarine, per 93-015) ug/l Chronic (WLA _c) is calculated as follows: 50x chronic standard for estuarine, per 93-015) ug/l |
| Aldrin | believed absent | 1.3 | 0.13 | | | Limit not evaluated |
| Ammonia | 1998 season values, see WLA program page | 1.05 mg/l | 0.16 mg/l | 2.10 | 7.90 | Max daily limit of 2.1 mg/l and average monthly limit of 1.68 mg/l determined. |
| Arsenic-trivalent, inorganic | 50 measured as Total Recoverable | 69* | 36* | 138* | 1800* | No limit indicated after evaluation |
| Cadmium | 3 measured as Total Recoverable | 43* | 9.3* | 86* | 465* | No limit indicated after evaluation |

| PARAMETER | EFFLUENT CONCENTRATION | VIRGINIA ACUTE CRITERIA SALTWATER | VIRGINIA CHRONIC CRITERIA SALTWATER | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|---------------------------|---|--|--|---|-------|--|
| | | | | AVG FLOW | | Data from 2C application evaluated and all units ug/l, unless otherwise specified Limit not evaluated *Measured as Dissolved species |
| Chlordane | ug/l believed absent | ug/l 0.09 | ug/l 0.004 | 0.18 | 0.2 | |
| Chromium-hexavalent | 30 measured as Total Recoverable | 1100* | 50* | 2200* | 2500* | No limit indicated after evaluation of Total Cr |
| Chromium-trivalent | 30 measured as Total Recoverable | | No Saltwater value | | | Limit not evaluated |
| Copper, Total Recoverable | 80 measured as Total Recoverable | 2.9* | 2.9* | 5.8* | 145* | No dissolved effluent data available; total recoverable data cannot be used to establish limit per 93-015 |
| Cyanide, Total | 1998 season values, see WLA program page | 1.0 | 1.0 | 2 | 50 | Mo. Avg limit of 1.54 ug/l, Max Daily limit of 2 ug/l determined |
| DDT | believed absent | 0.13 | 0.001 | 0.26 | 0.05 | Limit not evaluated |
| Demeton | no information available | | 0.1 | | | Limit not evaluated |
| Dieldrin | believed absent | 0.71 | 0.0019 | 1.42 | 0.095 | Limit not evaluated |
| Endosulfan | believed absent | 0.34 | 0.0087 | 0.068 | 0.435 | Limit not evaluated |
| Endrin | believed absent | 0.037 | 0.0023 | 0.074 | 0.115 | Limit not evaluated |

| PARAMETER | EFFLUENT CONCENTRATION | VIRGINIA ACUTE CRITERIA SALTWATER | VIRGINIA CHRONIC CRITERIA SALTWATER | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|------------------|--|--|--|---|-------|--|
| | | | | AVG FLOW | | Data from 2C application evaluated and all units ug/l, unless otherwise specified Limit not evaluated *Measured as Dissolved species |
| Guthion | no information available | ug/1 | 0.01 ug/1 | | 0.5 | |
| Heptachlor | believed absent | 0.053 | 0.0036 | 0.106 | 0.18 | Limit not evaluated |
| Hydrogen Sulfide | believed absent | | 2.0 | | 100 | Limit not evaluated |
| Iron | 400 measured as Total Recoverable | | No Saltwater Value | | | Limit not evaluated |
| Kepone | No information available | | 0 | | | Limit not evaluated |
| Lead | 120 Total recoverable | 220* | 8.5* | 440* | 425* | No limit indicated after evaluation |
| Lindane | believed absent | 0.16 | 0.01 | 0.32 | 0.5 | Limit not evaluated |
| Malathion | No information available | | 0.1 | | | Limit not evaluated |
| Manganese | believed absent | | 100* | | | Limit not evaluated |
| Mercury | believed absent | 2.1 * | 0.025 * | 4.2* | 1.25* | Limit not evaluated |

| PARAMETER | EFFLUENT CONCENTRATION | VIRGINIA ACUTE CRITERIA SALTWATER | VIRGINIA CHRONIC CRITERIA SALTWATER | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|---------------------------|------------------------------------|--|--|---|-------|--|
| | | | | AVG FLOW | | |
| Methoxychlor | No information available | ug/1 | 0.03 ug/1 | | 1.5* | Data from 2C application evaluated and all units ug/l, unless otherwise specified Limit not evaluated *Measured as Dissolved species |
| Mirex | No information available | | 0 | | | Limit not evaluated |
| Nickel | 40 Total Recoverable | 75* | 8.3* | 150* | 415* | All data less than WLA; no limit necessary |
| Parathion | No information available | | 0.04 | | | Limit not evaluated |
| Phenol | 10, measured as total phenol | | | | | (Human health standard of 4600000) |
| Phthalate Esters | believed absent | | 3.0 | | | Limit not evaluated |
| Polychlorinated Biphenyls | believed absent | | 0.03 | | 1.5 | Limit not evaluated |
| Selenium | 600 Total Selenium | 300* | 71* | 600* | 3550* | No dissolved effluent data available; total recoverable data cannot be used to establish limit per 93-015 |
| Silver | 40 Total Recoverable | 2.3 * | | 4.6* | | No dissolved effluent data available; total recoverable data cannot be used to establish limit per 93-015 |

| PARAMETER | EFFLUENT CONCENTRATION | VIRGINIA ACUTE CRITERIA SALTWATER | VIRGINIA CHRONIC CRITERIA SALTWATER | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|-------------|---|--|--|---|-------|---|
| | | | | AVG FLOW | | Data from 2C application evaluated and all units ug/l, unless otherwise specified |
| Toxaphene | ug/l believed absent | 0.21 ug/l | 0.0002 ug/l | 0.42 | 0.01 | Limit not evaluated *Measured as Dissolved species |
| Tributyltin | (Total Tin believed absent--no TBT used onsite) | | | | | Limit not evaluated |
| Zinc | 30 Total Recoverable | 95* | 86* | 190* | 4300* | No limit necessary after evaluation |

Table IV

EVALUATION OF EFFLUENT CHARACTERIZATION DATA--The only new data received for evaluation has been ammonia and cyanide, therefore these were the only two parameters evaluated for the permit modification. Evaluation of other parameters has been carried over from 12/97 permit reissuance.

Outfall 002

Receiving Stream: Hardness: NA (Saltwater Limits apply)

Flow: 0.26 MGD (Flow of effluent used in calculating mass balance)

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALTWATER ug/l | VIRGINIA CHRONIC CRITERIA SALTWATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, unless otherwise specified, all units ug/l unless specified *Measured as Dissolved species |
|------------------------------|--|--|--|---|---|--|
| | | | | AVG FLOW | | |
| | | | | Acute (WLA _a) (23 x acute standard for estuarine, per D. Phillips diffuser evalutation) ug/l | Chronic (WLA _c) (50x chronic standard default for estuar- ine, per D. Phillips guidance) ug/l | |
| Aldrin | believed absent | 1.3 | 0.003 | | | Limit not evaluated |
| Ammonia | 1998 season values, see WLA program page | 0.49 mg/l | 0.07 mg/l | 11.27 mg/l | 3.71 mg/l | Avg. Mo. limit 38.0 mg/l, Max daily limit 46.0 mg/l determined. |
| Arsenic-trivalent, inorganic | 20 measured as Total Recoverable | 69* | 36* | 1587* | 1800* | No limit necessary; datum less than QL of less than WLA |
| Cadmium | believed absent | 43* | 9.3* | 989* | 465* | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALTWATER ug/l | VIRGINIA CHRONIC CRITERIA SALTWATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, unless otherwise specified, all units ug/l unless specified |
|---------------------------|--|--|--|--------------------------------------|-------|--|
| | | | | AVG FLOW | | |
| Chlordane | believed absent | 0.09 | 0.004 | 2.07 | 0.2 | *Measured as Dissolved species Limit not evaluated |
| Chromium-hexavalent | 20 measured as Total Recoverable | 1100* | 50* | 25300* | 2500* | Total Chromium value of 20 ug/l used to show no Cr VI limit necessary |
| Chromium-trivalent | 20 measured as Total Recoverable | | No Saltwater value | | | Limit not evaluated |
| Copper, Total Recoverable | 100 measured as Total Recoverable | 2.9* | 2.9* | 66.7* | 145* | No dissolved effluent data available; total recoverable data cannot be used to establish limit per 93-015 |
| Cyanide, Total | 1998 season values, see WLA program page | 1.0 | 1.0 | 101 | 101 | No limit is required for cyanide. |
| DDT | believed absent | 0.13 | 0.001 | 2.99 | 0.05 | Limit not evaluated |
| Demeton | no information available | | 0.1 | | | Limit not evaluated |
| Dieldrin | believed absent | 0.71 | 0.0019 | 16.33 | 0.095 | Limit not evaluated |
| Endosulfan | believed absent | 0.34 | 0.0087 | 7.82 | 0.435 | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALTWATER ug/l | VIRGINIA CHRONIC CRITERIA SALTWATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, unless otherwise specified, all units ug/l unless specified |
|------------------|--|--|--|--------------------------------------|-------|--|
| | | | | AVG FLOW | | |
| Endrin | believed absent | 0.037 | 0.0023 | 0.851 | 0.115 | *Measured as Dissolved species Limit not evaluated |
| Guthion | no information available | | 0.01 | | 0.5 | Limit not evaluated |
| Heptachlor | believed absent | 0.053 | 0.0036 | 1.219 | 0.18 | Limit not evaluated |
| Hydrogen Sulfide | believed absent | | 2.0 | | 100 | Limit not evaluated |
| Iron | Total Iron believed absent | | No Saltwater Value | | | Limit not evaluated |
| Kepone | No information available | | 0 | | | Limit not evaluated |
| Lead | 10 Total recoverable | 220* | 8.5* | 5060* | 425* | No limit indicated after evaluation |
| Lindane | believed absent | 0.16 | 0.01 | 3.68 | 0.5 | Limit not evaluated |
| Malathion | No information available | | 0.1 | | | Limit not evaluated |
| Manganese | believed absent | | 100 | | | Limit not evaluated |
| Mercury | believed absent | 2.1 * | 0.025 * | 48.3* | 1.25* | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/1 | VIRGINIA ACUTE CRITERIA SALTWATER ug/1 | VIRGINIA CHRONIC CRITERIA SALTWATER ug/1 | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, unless otherwise specified, all units ug/l unless specified |
|---------------------------|--|--|--|--------------------------------------|-------|--|
| | | | | AVG FLOW | | |
| Methoxychlor | No information available | | 0.03 | | 1.5 | *Measured as Dissolved species Limit not evaluated |
| Mirex | No information available | | 0 | | | Limit not evaluated |
| Nickel | 50 Total Recoverable | 75* | 8.3* | 1725* | 415* | All data less than WLA; no limit necessary |
| Parathion | No information available | | 0.04 | | | Limit not evaluated |
| Phenol | 6, measured as Total Phenol | | | | | (Human health standard of 4600000) Limit not evaluated |
| Phthalate Esters | believed absent | | 3.0 | | | Limit not evaluated |
| Polychlorinated Biphenyls | believed absent | | 0.03 | | 1.5 | Limit not evaluated |
| Selenium | 2 Total Selenium | 300* | 71* | 6900* | 3550* | No limit indicated after evaluation |
| Silver | 50 Total Recoverable | 2.3 * | | 52.9* | | All data less than WLA, no limit necessary |
| Toxaphene | believed absent | 0.21 | 0.0002 | 4.83 | 0.01 | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALTWATER ug/l | VIRGINIA CHRONIC CRITERIA SALTWATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, unless otherwise specified, all units ug/l unless specified |
|-------------|---|--|--|--------------------------------------|-------|--|
| | | | | AVG FLOW | | |
| Tributyltin | (Total Tin believed absent--no TBT used onsite) | | | | | *Measured as Dissolved species Limit not evaluated |
| Zinc | 10 Total Recoverable | 95* | 86* | 2185* | 4300* | All data less than WLA, no limit necessary |
| | | | | | | |

Table V

EVALUATION OF EFFLUENT CHARACTERIZATION DATA

Outfall 003 -The only new data received for evaluation has been ammonia, therefore this was the only parameter evaluated. Evaluation of other parameters has been carried over from 12/97 permit reissuance.
Receiving Stream: Hardness: NA (Saltwater Limits apply)
Flow 0.30 MGD

| PARAMETER | EFFLUENT CONCENTRATION ug/l | VIRGINIA ACUTE CRITERIA SALT WATER ug/l | VIRGINIA CHRONIC CRITERIA SALT WATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, all units ug/l, unless otherwise specified * The metals form is the Dissolved form |
|------------------------------|--|---|---|--|---|---|
| | | | | AVG FLOW | | |
| | | | | Acute (WLA _a) (2x acute standard for estuarine, per 93-015) ug/l | Chronic (WLA _c) (50x chronic standard for estuarine, per 93-015) ug/l | |
| Aldrin | believed absent | 1.3 | 0.003 | | | Limit not evaluated |
| Ammonia | 420,202, 95,235, 252, 207, 132, 87, 109, 70, 64 mg/l (condensate to lagoon, 1996 values) | 1.69 | 0.25 | 49.01 (Dilution ratio of 28:1 recommended by Dale Phillips in note dated 8/17/98) | NA Chronic toxicity does not apply to discharge 3 hr. long) | Avg. Monthly limit of 39.6 mg/l, max daily limit of 49.0 mg/l determined. |
| Arsenic-trivalent, inorganic | believed absent | 69* | 36* | 138* | 1800* | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALT WATER ug/l | VIRGINIA CHRONIC CRITERIA SALT WATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, all units ug/l, unless otherwise specified * The metals form is the Dissolved form |
|---------------------|--|--|--|---|-------|--|
| | | | | AVG FLOW | | |
| Cadmium | 39 measured as Total | 43* | 9.3* | 86* | 465* | No limit indicated after evaluation |
| Chlordane | believed absent | 0.09 | 0.004 | 0.18 | 0.2 | Limit not evaluated |
| Chromium-hexavalent | 13 measured as Total Recoverable | 1100* | 50* | 2200* | 2500* | Total Chromium value of 13 ug/l used to show no Cr VI limit necessary |
| Chromium-trivalent | 13 measured as Total Recoverable | | No Saltwater value | | | Limit not evaluated |
| Copper | 198 measured as Total Recoverable | 2.9* | 2.9* | 5.8* | 145* | No dissolved effluent data available; total recoverable data cannot be used to establish limit per 93-015 |
| Cyanide, Total | believed absent | 1.0 | 1.0 | 2 | 50 | No limit evaluated |
| DDT | believed absent | 0.13 | 0.001 | 0.26 | 0.05 | Limit not evaluated |
| Demeton | no information available | | 0.1 | | | Limit not evaluated |
| Dieldrin | believed absent | 0.71 | 0.0019 | 1.42 | 0.095 | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALT WATER ug/l | VIRGINIA CHRONIC CRITERIA SALT WATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, all units ug/l, unless otherwise specified * The metals form is the Dissolved form |
|------------------|--|--|--|---|-------|--|
| | | | | AVG FLOW | | |
| Endosulfan | believed absent | 0.34 | 0.0087 | 0.068 | 0.435 | Limit not evaluated |
| Endrin | believed absent | 0.037 | 0.0023 | 0.074 | 0.115 | Limit not evaluated |
| Guthion | no information available | | 0.01 | | 0.5 | Limit not evaluated |
| Heptachlor | believed absent | 0.053 | 0.0036 | 0.106 | 0.18 | Limit not evaluated |
| Hydrogen Sulfide | believed absent | | 2.0 | | 100 | Limit not evaluated |
| Iron | Total Iron believed absent | | No Saltwater Value | | | Limit not evaluated |
| Kepone | No information available | | 0 | | | Limit not evaluated |
| Lead | 28 Total recoverable | 220* | 8.5* | 440* | 425* | No limit indicated after evaluation |
| Lindane | believed absent | 0.16 | 0.01 | 0.32 | 0.5 | Limit not evaluated |
| Malathion | No information available | | 0.1 | | | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALT WATER ug/l | VIRGINIA CHRONIC CRITERIA SALT WATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, all units ug/l, unless otherwise specified * The metals form is the Dissolved form |
|---------------------------|--|--|--|---|-------|--|
| | | | | AVG FLOW | | |
| Manganese | believed absent | | 100 | | | Limit not evaluated |
| Mercury (as a standard) | believed absent | 2.1* | 0.025 * | 4.2* | 1.25* | All data below QL of 0.2 ug/l; no limit necessary. |
| Methoxychlor | No information available | | 0.03 | | 1.5 | Limit not evaluated |
| Mirex | No information available | | 0 | | | Limit not evaluated |
| Nickel | 140 Total Recoverable | 75* | 8.3* | 150* | 415* | No limit indicated after evaluation |
| Parathion | No information available | | 0.04 | | | Limit not evaluated |
| Phenol | believed absent | | | | | (Human health standard of 4600000) Limit not evaluated |
| Phthalate Esters | believed absent | | 3.0 | | | Limit not evaluated |
| Polychlorinated Biphenyls | believed absent | | 0.03 | | 1.5 | Limit not evaluated |
| Selenium | 19 Total Selenium | 300 * | 71 * | 600* | 3550* | All data less than WLA; no limit necessary |
| Silver | 0.5 Total Recoverable | 2.3* | | 4.6* | | All data less than WLA; no limit necessary |

| PARAMETER | EFFLUENT CONCENTRATION ug/l | VIRGINIA ACUTE CRITERIA SALT WATER ug/l | VIRGINIA CHRONIC CRITERIA SALT WATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, all units ug/l, unless otherwise specified * The metals form is the Dissolved form Limit not evaluated |
|-------------|---|--|--|---|-------|---|
| | | | | AVG FLOW | | |
| Toxaphene | believed absent | 0.21 | 0.0002 | 0.42 | 0.01 | Limit not evaluated |
| Tributyltin | (Total Tin believed absent--no TBT used onsite) | | | | | Limit not evaluated |
| Zinc | 111 Total Recoverable | 95* | 86* | 190* | 4300* | All data less than WLA; no limit necessary |
| | | | | | | |

Table VI

EVALUATION OF EFFLUENT CHARACTERIZATION DATA

Outfall 004 -The only new data received for evaluation has been ammonia, therefore this was the only parameter evaluated. Evaluation of other parameters has been carried over from 12/97 permit reissuance.

Receiving Stream: Hardness: NA (Saltwater Limits apply)

Flow 12.4MGD

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALT WATER ug/l | VIRGINIA CHRONIC CRITERIA SALT WATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, unless otherwise specified * The metals form is the Dissolved form |
|------------------------------|---|--|--|--|--|--|
| | | | | AVG FLOW | | |
| | | | | Acute (WLA _a) (2x acute standard for estuarine, per 93-015) ug/l | Chronic (WLA _c) (50x chronic standard for estuarine, per 93-015) ug/l | |
| Aldrin | believed absent | 1.3 | 0.003 | | | Limit not evaluated |
| Ammonia | 1.46 mg/l | 1.05 | 0.16 | 2.1 mg/l | 7.9 mg/l | Avg. Mo. Limit of 1.71, Max daily limit of 2.1 determined. |
| Arsenic-trivalent, inorganic | 50 measured as Total Recoverable | 69* | 36* | 138* | 1800* | No limit necessary; datum less than WLA ug/l |
| Cadmium | 6 measured as Total Recoverable | 43* | 9.3* | 86* | 465* | No limit indicated after evaluation |
| Chlordane | believed absent | 0.09 | 0.004 | 0.18 | 0.2 | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/l | VIRGINIA ACUTE CRITERIA SALT WATER ug/l | VIRGINIA CHRONIC CRITERIA SALT WATER ug/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|---------------------|---|--|--|--------------------------------------|-------|---|
| | | | | AVG FLOW | | |
| Chromium-hexavalent | 6 measured as Total Recoverable | 1100* | 50* | 2200* | 2500* | Data from 2C application evaluated, unless otherwise specified * The metals form is the Dissolved form Total Chromium value of 6 ug/l used to show no Cr VI limit necessary |
| Chromium-trivalent | 2 measured as Total Recoverable | | No Saltwater value | | | Limit not evaluated |
| Copper | 40 measured as Total Recoverable | 2.9* | 2.9* | 5.8* | 145* | No dissolved effluent data available; total recoverable data cannot be used to establish limit per 93-015 |
| Cyanide, Total | believed absent | 1.0 | 1.0 | 2 | 50 | Limit determined not to be necessary after evaluation |
| DDT | believed absent | 0.13 | 0.001 | 0.26 | 0.05 | Limit not evaluated |
| Demeton | no information available | | 0.1 | | | Limit not evaluated |
| Dieldrin | believed absent | 0.71 | 0.0019 | 1.42 | 0.095 | Limit not evaluated |
| Endosulfan | believed absent | 0.34 | 0.0087 | 0.068 | 0.435 | Limit not evaluated |
| Endrin | believed absent | 0.037 | 0.0023 | 0.074 | 0.115 | Limit not evaluated |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/1 | VIRGINIA ACUTE CRITERIA SALT WATER ug/1 | VIRGINIA CHRONIC CRITERIA SALT WATER ug/1 | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|-------------------------|--|--|--|--------------------------------------|-------|---|
| | | | | AVG FLOW | | |
| Guthion | no information available | | 0.01 | | 0.5 | Data from 2C application evaluated, unless otherwise specified Limit not evaluated * The metals form is the Dissolved form |
| Heptachlor | believed absent | 0.053 | 0.0036 | 0.106 | 0.18 | Limit not evaluated |
| Hydrogen Sulfide | believed absent | | 2.0 | | 100 | Limit not evaluated |
| Iron | 588 measured as Total Iron | | No Saltwater Value | | | Limit not evaluated |
| Kepone | No information available | | 0 | | | Limit not evaluated |
| Lead | 100 Total recoverable | 220* | 8.5* | 440* | 425* | No limit indicated after evaluation |
| Lindane | believed absent | 0.16 | 0.01 | 0.32 | 0.5 | Limit not evaluated |
| Malathion | No information available | | 0.1 | | | Limit not evaluated |
| Manganese | believed absent | | 100 | | | Limit not evaluated |
| Mercury (as a standard) | believed absent | 2.1* | 0.025 * | 4.2* | 1.25* | All data below QL of 0.2 ug/l; no limit necessary. |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/1 | VIRGINIA ACUTE CRITERIA SALT WATER ug/1 | VIRGINIA CHRONIC CRITERIA SALT WATER ug/1 | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|---------------------------|--|--|--|--------------------------------------|-------|--|
| | | | | AVG FLOW | | |
| Methoxychlor | No information available | | 0.03 | | 1.5 | Data from 2C application evaluated, unless otherwise specified Limit not evaluated * The metals form is the Dissolved form |
| Mirex | No information available | | 0 | | | Limit not evaluated |
| Nickel | 10 Total Recoverable | 75* | 8.3* | 150* | 415* | No limit indicated after evaluation |
| Parathion | No information available | | 0.04 | | | Limit not evaluated |
| Phenol | believed absent | | | | | (Human health standard of 4600000) Limit not evaluated |
| Phthalate Esters | believed absent | | 3.0 | | | Limit not evaluated |
| Polychlorinated Biphenyls | believed absent | | 0.03 | | 1.5 | Limit not evaluated |
| Selenium | 800 Total Selenium | 300 * | 71 * | 600* | 3550* | No dissolved effluent data available; total recoverable data cannot be used to establish limit per 93-015 |
| Silver | 50 Total Recoverable | 2.3* | | 4.6* | | No dissolved effluent data available; total recoverable data cannot be used to establish limit per 93-015 |

| PARAMETER | EFFLUENT CONCEN- TRATION ug/1 | VIRGINIA ACUTE CRITERIA SALT WATER ug/1 | VIRGINIA CHRONIC CRITERIA SALT WATER ug/1 | PROJECTED IN STREAM CONCENTRATION | | COMMENTS |
|-------------|---|--|--|--------------------------------------|-------|---|
| | | | | AVG FLOW | | |
| Toxaphene | believed absent | 0.21 | 0.0002 | 0.42 | 0.01 | Data from 2C application evaluated, unless otherwise specified * The metals form is the Dissolved form Limit not evaluated |
| Tributyltin | (Total Tin believed absent--no TBT used onsite) | | | | | Limit not evaluated |
| Zinc | 20 Total Recoverable | 95* | 86* | 190* | 4300* | All data less than WLA; no limit necessary |

Table VII

EVALUATION OF EFFLUENT CHARACTERIZATION DATA

Outfall 005--The only data to evaluate for this new noncontact cooling water outfall is an ammonia value taken at the end of last season. The owner has assured DEQ that this outfall is identical in wastewater characteristics to the 004 noncontact cooling water. Items V and VI of Form 2C will be required within 2 years of the date of the modification of this permit.

Receiving Stream: Hardness: NA (Saltwater Limits apply)
 Flow 12.9MGD

| PARAMETER | EFFLUENT CONCENTRATION mg/l | VIRGINIA ACUTE CRITERIA SALT WATER mg/l | VIRGINIA CHRONIC CRITERIA SALT WATER mg/l | PROJECTED IN STREAM CONCENTRATION | | COMMENTS Data from 2C application evaluated, unless otherwise specified * The metals form is the Dissolved form |
|-----------|--------------------------------|---|---|--|---|---|
| | | | | AVG FLOW | | |
| | | | | Acute (WLA _a) (2x acute standard for estuarine, per 93-015) mg/l | Chronic (WLA _c) (50x chronic standard for estuarine, per 93-015) mg/l | |
| Ammonia | 3.41 | 1.05 | 0.16 | 2.1 | 7.9 | Av. Mo. Limit of 1.71 mg/l, Max Daily Limit of 2.1 mg/l determined |

TABLE VIII
EFFLUENT LIMITATIONS
INDUSTRIAL

(x) Final Limitations
() Interim Limitations

OUTFALL 001

Dates: From the date the permit is reissued
To the date of permit expiration

SIC CODE 2077

| PARAMETER | BASIS | | | | | | | EFFLUENT LIMITS | | | MONITORING REQUIREMENTS | |
|-------------------------------|---------------------|---------------------|----------------------|-----------------------------|-----|-----|----------------|------------------------|-----|-----------|-------------------------|-------------------------|
| | EFFLUENT GUIDELINES | | | BEST PROFESSIONAL JUDGEMENT | | | WATER QUALITY* | PERMIT LIMIT | | | | |
| | BPT (PROP) (PROMUL) | BAT (PROP) (PROMUL) | NSPS (PROP) (PROMUL) | BCT | BPT | BAT | | AVG. | MIN | MAX. | FRE-QUENCY | SAM-PLER TYPE |
| BOD ₅ (kg/day) | | | | | | | 5 | 1754 | NA | 3150 | 2/Month | 24-HC |
| TSS (kg/day) | | | | | | | 6 | 678 | NA | 930 | 2/Month | 24-HC |
| Oil and Grease (kg/day) | | | | | | | 6 | 403 | NA | 413 | 2/Month | 24-HC |
| pH (S.U.) | | | | | | | 4 | NA | 6 | 9 | 2/Month | Grab |
| Temperature (degrees C) | | | | | | | 4 | NL | NA | 50 | 1/Day | Immersion Stabilization |
| Flow (MGD) | | | | | | | | NL | NA | NL | Continuous | Estimate |
| Total Phosphorus (mg/l, kg/d) | | | | | | | 7 | 2.0 mg/l 245.8 kg/d | NA | NL | 2/Month | 24-HC |
| Total Nitrogen (mg/l, kg/d) | | | | | | | 7 | NL | NA | NL | 2/Month | 24-HC |
| Cyanide (ug/l)* | | | | | | | 4 | 1.54 ug/l | NA | 2.00 ug/l | 2/Month | Grab |

TABLE IX
EFFLUENT LIMITATIONS
INDUSTRIAL

(x) Final Limitations
() Interim Limitations

OUTFALL 002 Aerated Lagoons

Dates: From the date the permit is reissued
To the date of permit expiration

SIC CODE 2077

| PARAMETER | BASIS | | | | | | | EFFLUENT LIMITS | | | MONITORING REQUIREMENTS | |
|-------------------------------|---------------------|---------------------|----------------------|-----------------------------|-----|-----|----------------|-----------------|-----|------|-------------------------|--------------------|
| | EFFLUENT GUIDELINES | | | BEST PROFESSIONAL JUDGEMENT | | | WATER QUALITY* | PERMIT LIMIT | | | | |
| | BPT (PROP) (PROMUL) | BAT (PROP) (PROMUL) | NSPS (PROP) (PROMUL) | BCT | BPT | BAT | | AVG. | MIN | MAX. | FREQUENCY | SAMPLE TYPE |
| Flow (MGD) | | | | | | | | NL | NA | NL | Continuous | Measure |
| Temperature (degrees C) | | | | | | | 4 | NL | NA | NL | 1/Day | Immersi Station |
| BOD ₅ (kg/d) | | | | | | | 5,7,8 | 468 | NA | 839 | 2/Month | 24-HC |
| Total Suspended Solids (kg/d) | | | | | | | 6,7,8 | 177 | NA | 244 | 2/Month | 24-HC |
| Oil and Grease (kg/d) | | | | | | | 6,7,8 | 29.9 | NA | 30.7 | 2/Month | 24-HC |
| Ammonia (mg/l)* | | | | | | | 5 | 38.0 | NA | 45.3 | 2/Month | 24-HC |
| pH (S.U.) | | | | | | | 4 | NA | 6.0 | 9.0 | 2/Week | Grab |

*Compliance Schedule Applies: see Table XII

Key

1. Per 208 Plan and Date
2. Per 303(e) Plan and Date
3. Per 401 Certification and Date
4. SWCB Water Quality Standards

5. VIMS Model
6. Reduced by same percentage as EPA multipliers reduced technology limits--See Table II for explanation
7. Must meet WQ limits when summed with 001 and 002
8. Must meet BPT limits when summed with 001, 002 and 003

TABLE X
EFFLUENT LIMITATIONS
INDUSTRIAL

(x) Final Limitations
() Interim Limitations

OUTFALL 003 Evaporator Condensate

Dates: From the date the permit is issued
To permit expiration

SIC CODE 2077

| PARAMETER | BASIS | | | | | | | EFFLUENT LIMITS | | | MONITORING REQUIREMENTS | |
|---------------------------------|---------------------|---------------------|----------------------|-----------------------------|-----|-----|----------------|-----------------|-----|------|-------------------------|--------------------|
| | EFFLUENT GUIDELINES | | | BEST PROFESSIONAL JUDGEMENT | | | WATER QUALITY* | PERMIT LIMIT | | | | |
| | BPT (PROP) (PROMUL) | BAT (PROP) (PROMUL) | NSPS (PROP) (PROMUL) | BCT | BPT | BAT | | AVG. | MIN | MAX. | FRE-QUENCY | SAMPL E TYPE |
| Flow (MGD) | | | | | | | | NL | NA | NL | Continuous | Estimat |
| Temperature (degrees C) | | | | | | | 4 | NL | NA | NL | 1/Day | Immers on- S+ "liz |
| Ammonia (mg/l)* | | | | | | | 4 | 39.6 | NA | 49.0 | 2/Month | 24-HC |
| BOD ₅ (kg/day) | | | | | | | 4,5,6 | 4296 | NA | 7710 | 2/Month | 24-HC |
| Total Suspended Solids (kg/day) | | | | | | | 5,6 | 114 | NA | 282 | 2/Month | 24-HC |
| Oil and Grease (kg/day) | | | | | | | 5,6 | 426 | NA | 784 | 2/Month | Grab |

| PARAMETER | BASIS | | | | | | | EFFLUENT LIMITS | | | MONITORING REQUIREMENTS | |
|--|---------------------|---------------------|----------------------|-----------------------------|-----|-----|----------------|-----------------|-----|------|-------------------------|-------------|
| | EFFLUENT GUIDELINES | | | BEST PROFESSIONAL JUDGEMENT | | | WATER QUALITY* | PERMIT LIMIT | | | | |
| | BPT (PROP) (PROMUL) | BAT (PROP) (PROMUL) | NSPS (PROP) (PROMUL) | BCT | BPT | BAT | | AVG. | MIN | MAX. | FRE-QUENCY | SAMPLE TYPE |
| Dissolved Oxygen (mg/l) (shall be reported as a daily min. value and/or daily average value should more than one sample per day be taken). | | | | | | | 4 | NL | NL | NA | 1/Day | Grab |
| pH (S.U.) | | | | | | | 4 | NA | 6.0 | 9.0 | 1/Day | Grab |

*Key

1. Per 208 Plan and Date
2. Per 303(e) Plan and Date
3. Per 401 Certification and Date
4. SWCB Water Quality Standards
5. Must meet WQ limits when summed with 001 and 002
6. Must meet BPT limits when summed with 001, 002 and 003

TABLE XI
EFFLUENT LIMITATIONS
INDUSTRIAL

(x) Final Limitations
() Interim Limitations

OUTFALL 004, 005 Non-Contact Cooling Water

Dates: From the date the permit is issued
To the date of permit expiration

SIC CODE 2077

| PARAMETER | BASIS | | | | | | | EFFLUENT LIMITS | | | MONITORING REQUIREMENTS | |
|-------------------------|---------------------|---------------------|----------------------|-----------------------------|-----|-----|----------------|-----------------|-----|------|-------------------------|-----------------------------------|
| | EFFLUENT GUIDELINES | | | BEST PROFESSIONAL JUDGEMENT | | | WATER QUALITY* | PERMIT LIMIT | | | | |
| | BPT (PROP) (PROMUL) | BAT (PROP) (PROMUL) | NSPS (PROP) (PROMUL) | BCT | BPT | BAT | | AVG. | MIN | MAX. | FRE-QUENCY | SAM- PLE TYPE |
| Flow (MGD) | | | | | | | | NL | NA | NL | Continuous | Estimate |
| Temperature (degrees C) | | | | | | | 4 | NL | NA | NL | 1/Day | Immer- sion- Str - at |
| Total Phosphorus (mg/l) | | | | | | | 5 | 2.0 | NA | NL | 1/Quarter | 24-HC |
| Total Nitrogen (mg/l) | | | | | | | 5 | NL | NA | NL | 1/Quarter | 24-HC |
| Ammonia mg/l | | | | | | | 4 | 2.1 | NA | 2.1 | 2/Month | 24-HC |
| pH (S.U.) | | | | | | | 4 | NA | 6.0 | 9.0 | 5/Week | Grab |

*Key

1. Per 208 Plan and Date
2. Per 303(e) Plan and Date
3. Per 401 Certification and Date
4. SWCB Water Quality Standards
5. SWCB Nutrient Policy

TABLE XII
EFFLUENT LIMITATIONS
INDUSTRIAL

(x) Final Limitations
() Interim Limitations

OUTFALL 006

Dates: From the date the CTO is issued for the out
To the date of permit expiration

SIC CODE 2077

| PARAMETER | BASIS | | | | | | | EFFLUENT LIMITS | | | MONITORING REQUIREMENTS | |
|---------------------------|---------------------|---------------------|----------------------|-----------------------------|-----|-----|----------------|------------------------|-----|-----------|-------------------------|----------------------------|
| | EFFLUENT GUIDELINES | | | BEST PROFESSIONAL JUDGEMENT | | | WATER QUALITY* | PERMIT LIMIT | | | | |
| | BPT (PROP) (PROMUL) | BAT (PROP) (PROMUL) | NSPS (PROP) (PROMUL) | BCT | BPT | BAT | | AVG. | MIN | MAX. | FRE-QUENCY | SAM-PL E TYPE |
| BOD ₅ (kg/day) | | | | | | | 5 | 1754 | NA | 3150 | 3/Week | 24-HC |
| TSS (kg/day) | | | | | | | 6 | 678 | NA | 930 | 3/Week | 24-HC |
| Oil and Grease (kg/day) | | | | | | | 6 | 403 | NA | 413 | 3/Week | 5 |
| pH (S.U.) | | | | | | | 4 | NA | 6 | 9 | 2/Month | Grab |
| Temperature (degrees C) | | | | | | | 4 | NL | NA | 50 | 1/Day | Immer sion Stabili- zation |
| Total Phosphorus | | | | | | | 7 | 2.0 mg/l 245.8 kg/d | NA | NA | 2/Month | 24-HC |
| Total Nitrogen | | | | | | | 7 | NL | NA | NL | 2/Month | 24-HC |
| Flow (MGD) | | | | | | | | NL | NA | NL | Continuous | Measur |
| Cyanide (ug/l)* | | | | | | | 4 | 1.54 ug/l | NA | 2.00 ug/l | 2/Month | Grab |
| Ammonia (mg/l)* | | | | | | | 4 | 2.1 | NA | 2.1 | 2/Month | 24-HC |

*Compliance Schedule Applies: see Table XIII

Key

1. Per 208 Plan and Date
2. Per 303(e) Plan and Date
3. Per 401 Certification and Date
4. SWCB Water Quality Standards
5. VIMS Model
6. Reduced by same percentage as EPA multipliers reduced technology limits--See Table II for explanation
7. Required by DEQ Nutrient Policy

Table XIII

This section is to be completed for all permits requiring a schedule of compliance.

The permittee shall achieve compliance with the final limits and monitoring requirements for ammonia-nitrogen at 001/006, 002 and 003 and cyanide at 001/006 as specified in this permit in accordance with the following schedule:

SCHEDULE OF COMPLIANCE FOR AMMONIA AND CYANIDE

| | |
|--|--|
| 1. Initiate design of facilities | Within 90 days after December 17, 1997.. |
| 2. Report of progress to DEQ | Quarterly. |
| 3. Achieve Compliance with Effluent Limitations. | Within 4 years of December 17, 1997. |

No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit to the Department's staff, either a report of progress, or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

TMDL

Because of the Compliance Schedule, this facility's receiving stream is listed in Part 2 of the current 303(D) list. The segment is: 1.0-MZ of Cockrell's Creek in the WQMA III Watershed (Potomac, Rappahannock, York and Bay Tributaries Area). The segment is listed because due to the compliance schedules for ammonia and cyanide parameters, there exists water quality limits that have not yet been complied with. The current limits which will result in attainment of water quality standards are: ammonia-nitrogen at 001/006 (1.68 mg/l average and 2.1 mg/l maximum), 002 (38.0 mg/l average and 45.3 mg/l maximum) and 003 (39.6 mg/l average and 49.0 mg/l maximum) and cyanide at 001/006 (1.54 ug/l average and 2.00 ug/l maximum). As the above table shows, the facility must be in compliance with these limits by December 17, 2001. Currently, the facility has submitted a joint permit application for improvements to the 002 outfall pipe, to include installation of the diffuser. This permit modification includes a modified outfall (001/006) where the cooling water flows will be combined to provide aeration treatment.

Table XIV

VPDES PERMIT PROGRAM
Permit Processing Change Sheet

1. Effluent Limits and Monitoring Schedule: (List any changes and give a brief rationale for the change).

| OUTFALL NO. | PARAMETER CHANGED | MONITORING LIMITS CHANGED | | EFFLUENT LIMITS CHANGED | | RATIONALE | DATE & INIT. |
|-------------|--------------------------|---------------------------|----|---|--|---|---------------|
| | | FROM | TO | FROM | TO | | |
| 001 | BOD, TSS, O&G | | | NL-summary sheet | 1754 kg/d, 678 kg/d, 403 kg/d mo. Avg respectively; 3150 kg/d, 930 kg/d, 413 kg/d Maximum, respectively | Owner requested proportioned limit instead of sum pages; Also limits have increased because Omega now has Ampro's share of the wasteload allocation in Cockrell's Creek. | 8/99 DMM |
| 001 | BOD, TSS, O&G | | | 1754 kg/d, 678 kg/d, 403 kg/d mo. Avg respectively; 3150 kg/d, 930 kg/d, 413 kg/d Maximum, respectively | 1755 kg/d, 655 kg/d, 372 kg/d mo. Avg respectively; 3142 kg/d, 1609 kg/d, 685 kg/d Maximum, respectively | Limits re-examined because TSS and O&G maximums seemed too low compared to sum of values given to Ampro and Zapata in past. BOD was increased slightly to sum of both plants' loadings and TSS and O&G maximums were selected as the lesser of newly calculated values or the sum of both plants' loadings (antibacksliding consideration). | 11/99 DMM |
| 001 | total phosphorus loading | | | 12.9 kg/d | 37.85 kg/d | With plant expansion, increased flow at 001 | 4/99 DMM |
| 001 | Ammonia-Nitrogen | | | 1.66 mg/l avg, 1.66 mg/l max | 1.68 mg/l avg, 2.0 mg/l max | new WLA40 program Loading limits taken out as per latest toxics guidance | 4/99 DMM 8/99 |
| 001 | Cyanide | | | 1.63 ug/l avg/2.0 ug/l max | 1.54 ug/l avg, 2.0 mg/l max | new WLA40 program; Loading limits taken out as per latest toxics guidance | 4/99 DMM 8/99 |

| OUTFALL NO. | PARAMETER CHANGED | MONITORING LIMITS CHANGED | | EFFLUENT LIMITS CHANGED | | RATIONALE | DATE & INITIAL |
|-------------|-------------------|---------------------------|----|--|--|---|------------------|
| | | FROM | TO | FROM | TO | | |
| 002 | BOD, TSS, O&G | | | NL-summary sheet | 468 kg/d, 177 kg/d, 29.9 kg/d mo. Avg, respectively; 839 kg/d, 244 kg/d, 30.7 kg/d max, respectively | Owner requested proportioned limit instead of sum pages; Also limits have increased because Omega now has Ampro's share of the wasteload allocation in Cockrell's Creek. | 8/99 DMM |
| 002 | BOD, TSS, O&G | | | 468 kg/d, 177 kg/d, 29.9 kg/d mo. Avg, respectively; 839 kg/d, 244 kg/d, 30.7 kg/d max, respectively | 468 kg/d, 171 kg/d, 27.6 kg/d mo. Avg, respectively; 837 kg/d, 422 kg/d, 50.9 kg/d max, respectively | Limits re-examined because TSS and O&G maximums seemed too low compared to sum of values given to Ampro and Zapata in past. BOD was increased slightly to sum of both plants' loadings and TSS and O&G maximums were selected as the lesser of newly calculated values or the sum of both plants' loadings (antibacksliding consideration). | 11/99 DMM |
| 002 | Ammonia-N | | | 7.4 mg/l avg, 9.1 max | 38 mg/l avg, 45 max | new diffuser study of Cockrell's Creek increased mixing dilution; Loading limits taken out per latest toxics guidance | 4/99 DMM 8/99 |
| 002 | Cyanide | | | 18.7 ug/l avg/23 max | none | found not to be necessary with new dilution analysis | 4/99 DMM |
| 003 | BOD, TSS, O&G | | | NL--summary sheet | 4296 kg/d, 114 kg/d, 426 kg/d Mo.Avg., respectively; 7710 kg/d, 282 kg/d, 784 kg/d, respectively | Owner requested proportioned limit instead of sum pages; Also limits have increased because Omega now has Ampro's share of the wasteload allocation in Cockrell's Creek. | 8/99 DMM |

| OUTFALL NO. | PARAMETER CHANGED | MONITORING LIMITS CHANGED | | EFFLUENT LIMITS CHANGED | | RATIONALE | DATE & INITIAL |
|-------------|-----------------------------|---------------------------|----|-------------------------|------------------------------|---|------------------|
| | | FROM | TO | FROM | TO | | |
| 003 | Ammonia-N | | | 2.1 mg/l avg/2.58 max | 39.6 mg/l avg/49.0 max | New guidance on mixing associated with barge discharge; Loading limits taken out per latest toxics guidance | 4/99 DMM 8/99 |
| 004 | Total Phosphorus | | | 115.8 kg/d avg | 93.9 kg/d | flow decreased at this outfall since the new outfall added | 4/99 DMM |
| 004 | Ammonia-N | none | NL | | | because one data point submitted from 1998 mon. season exceeded WQS--need more data to evaluate | 4/99 DMM |
| 005 | flow | none | NL | | | new outfall | 4/99 DMM |
| 005 | temperature, Total Nitrogen | none | NL | | | new outfall | 4/99 DMM |
| 005 | Total Phosphorus | | | none | 93.9 kg/d | new outfall | 4/99 DMM |
| 005 | Ammonia-Nitrogen | none | NL | | | because one data point submitted from 1998 mon. season exceeded WQS--need more data to evaluate | 4/99 DMM |
| 005 | pH | | | none | 6 min/9max | new outfall | 4/99 DMM |
| 006 | BOD | | | none | 1754 kg/d avg, 3150 kg/d max | new combined outfall--from 001 limits | 9/99 DMM |
| 006 | TSS | | | none | 678 kg/d avg, 930 kg/d max | new combined outfall--from 001 limits | 9/99 DMM |
| 006 | Oil and Grease | | | none | 403 kg/d avg, 413 kg/d max | new combined outfall--from 001 limits | 9/99 DMM |
| 006 | pH | | | none | 6 min/9 max | new combined outfall--from 001 limits | 9/99 DMM |
| 006 | Total Phosphorus | | | none | 245.8 kg/d | new combined outfall--from 004/005 limits | 9/99 DMM |
| 006 | Total Nitrogen | none | NL | | | new combined outfall--from 004/005 limits | 9/99 DMM |

| OUTFALL NO. | PARAMETER CHANGED | MONITORING LIMITS CHANGED | | EFFLUENT LIMITS CHANGED | | RATIONALE | DATE & INITIAL |
|-------------|-------------------|---------------------------|----|-------------------------|-----------------------------|---|----------------|
| | | FROM | TO | FROM | TO | | |
| 006 | Ammonia-Nitrogen | | | none | 1.68 mg/l avg, 2.1 mg/l max | new combined outfall--from 001 | 9/99 DMM |
| 006 | Cyanide | | | none | 1.54 ug/l avg, 2 ug/l max | new combined outfall--from 001 | 9/99 DMM |
| 006 | temperature | | | none | 45 degrees C | modeling calculations show combining discharge requires 45 deg. upper limit to maintain WQS (see 004/005 limit) | 9/99 DMM |

Additional Comments:

Zapata Protein bought its competitor, Ampro Fisheries, both dischargers to Cockrell's Creek. The name has changed to Omega Protein. This modification is to give them the wasteload allocation they've requested to Cockrell's Creek from the Ampro Fisheries' permit. The Ampro plant has been totally shut down now, and there is no chance of any discharge from the facility.

Antibacksliding review: Cockrell Creek is a tier one stream, considered fully allocated, based on the VIMS model and supporting documentation. The model was performed to model the creek for the menhaden plant limitations and showed a wasteload allocation of 5000 lb/day BOD₅. This wasteload allocation was split between the two menhaden plants on the creek at the time, and an amount (100 lb/day) was delegated to the Reedville WWTP. In accordance with Section 303(d)(4)(b), the water quality standards are being maintained in the receiving stream, and any revisions of water quality limitations are permissible if they are consistent with antidegradation policies under Section 302 (d) (4) (B). Discharge limitations for BOD₅, TSS and Oil and Grease are being revised. Also, load limitations for Phosphorus at the non-contact cooling water outfalls (004,005). Ammonia and cyanide limitations were readjusted in accordance with new guidance and new mixing analyses of Cockrell's Creek and the barge discharge to Chesapeake Bay. However, anti-backsliding does not apply to the ammonia and cyanide limitations as they were effective on a schedule and the date of final compliance has not yet been reached.

Antidegradation Review: Two facilities (Ampro and Zapata) have been combined into one. The water quality standards in Cockrell Creek will be maintained by the conditions of this permit. The 005 discharge is new, however, anti-degradation review is not required because the stream is Tier 1 status. The Clean Water Act allows modification of the permit limits because the change complies with Section 303(d)(4)(b) and in that case Section 402 (o) does not apply.

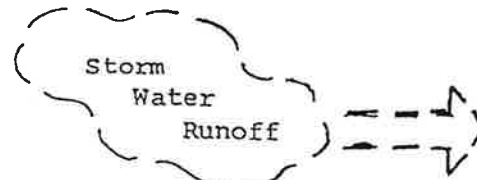
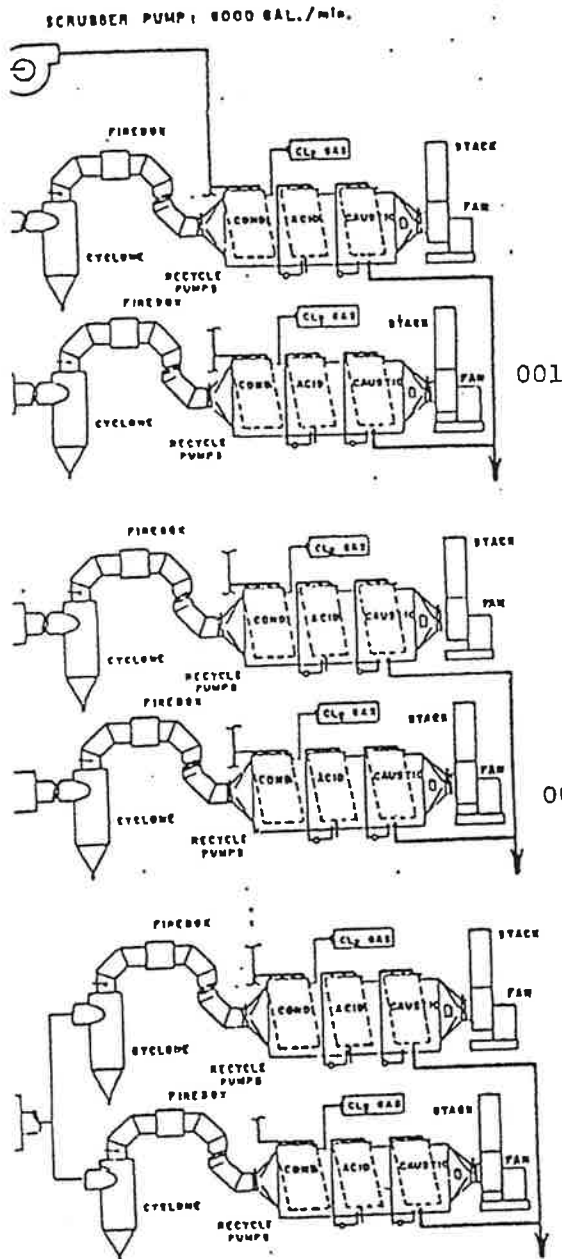
PUBLIC NOTICE

Will be completed after public notice period.



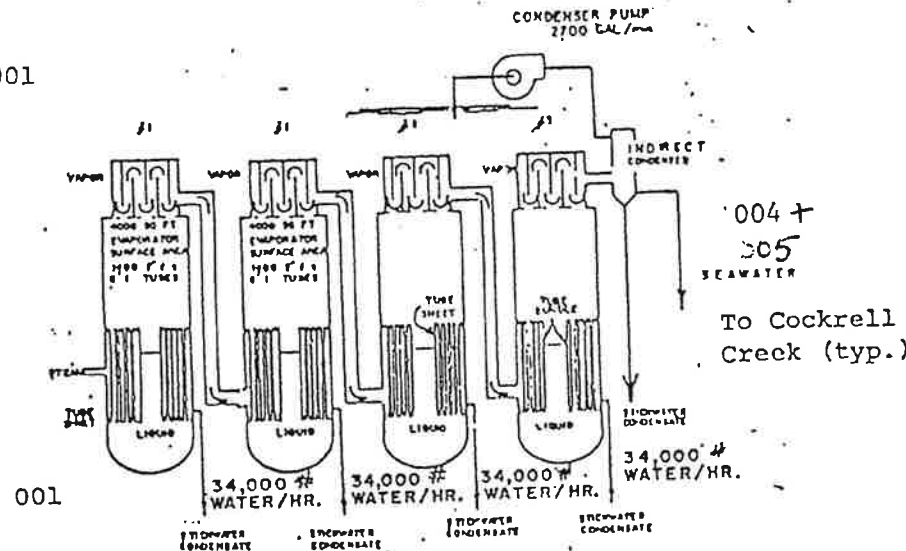
BOSTON
RICHMOND
EVANSTON

NOTE: SANITARY WASTEWATER IS DISCHARGED
DIRECTLY TO SERVICE AUTHORITY.

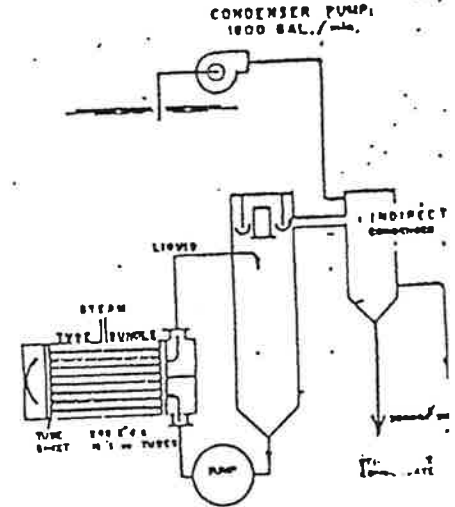


To
Cockrell Creek

Regulated by separate Stormwater General Permit



EVAPORATORS



CONCENTRATOR

ZAPATA HAYNIE-REEDVILLE PLANT
INDUSTRIAL WASTEWATER SOURCES

VA 0003867

NOTE: ALL CONDENSATE IS COLLECTED
PUMPED TO THE TREATMENT PLANT

002

SCRUBBERS

After issuance of a certificate to operate (CTO),
outfall was authorized to combine DDI D04 + D05 at the outfall location -

(except excess condensate

Fact Sheet
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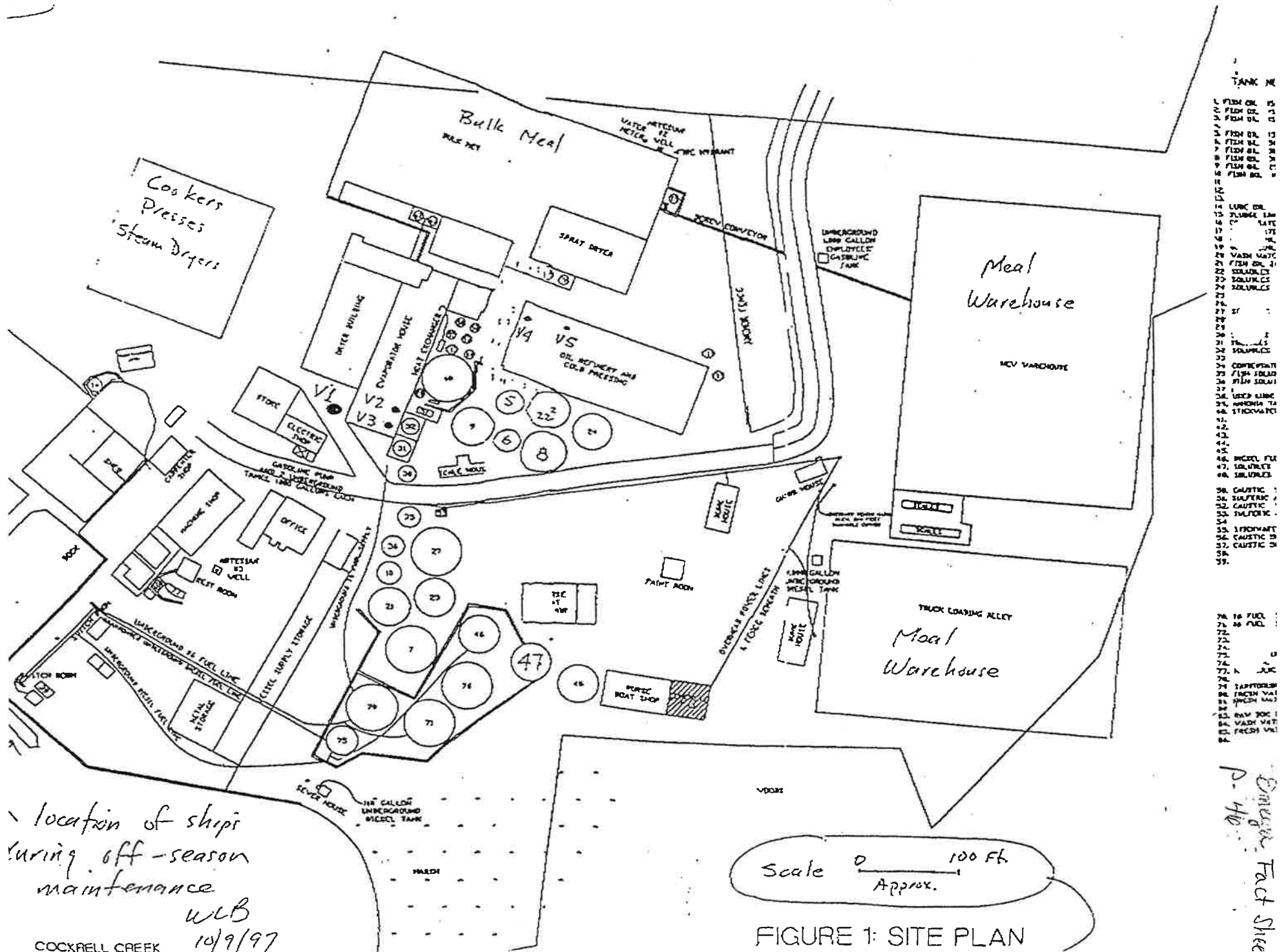
SIC CODE: 2077 (All Processes)



After issuance of a CTC, outfall 006 proposes to combine 001, 004 + 005 at the outfall location

14

Add



PIEDMONT REGIONAL OFFICE

UNSCHEDULED INSPECTION REPORT

GC PRO
MSA → JCMG
(PRO FILE)

| | | | |
|------------------------|--|-------------------------|-------------------------|
| FACILITY NAME: | <u>Omega Protein</u> | FACILITY No.: | <u>VA0003867</u> |
| INSPECTION DATE/TIME: | <u>July 15, 1999/1000 - 1200 hrs</u> | INSPECTOR: | <u>James Grandstaff</u> |
| REPORT COMPLETED: | <u>Sept. 8, 1999</u> | UNANNOUNCED INSPECTION? | <u>NO</u> |
| REPORT REVIEWED BY: | <u>D. Mosca and</u> <i>SGS 9/9/99</i> | | |
| PRESENT AT INSPECTION: | <u>Mr. Lyle Jett and Mr. John Barnes</u> | | |

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

Outfall 001: Discharge of reject scrubber water (air pollution control equipment) associated with the fuel-oil fired steam boiler. Solids are removed by cyclones prior to discharge. Storm water is also discharged through this outfall. Flow is measured by a Parshall flume with an ultrasonic sensor. This area was not inspected.

Pond/Lagoon (Outfall 002): Two aerated ponds in series receive condensate water from the evaporators. Each pond has a curtain to extend retention time. Each pond is equipped with two mechanical aerators and a network of diffusers. Diffused air is provided by four blowers. All equipment was fully operational and mixing appeared to be good. The wastewater in the lagoons was black and there was some floating sludge. Each pond had approximately three to four feet of available freeboard, structural integrity appeared to be good.

Flow Measurement Outfall 002: 90° v-notch weir with an ultrasonic sensor. The meter was fully operational at the time of the inspection.

Outfall 003: Untreated discharge of excess condensate water via barge discharge to specific quadrants in the Chesapeake Bay. This discharge is not usually used.

Outfall 004: Concentrator/evaporator water and some storm water. Flow is measured by a Parshall flume with an ultrasonic sensor. There was no discharge at the time of the inspection. This area was not inspected.

Outfall 005: Storm water discharge. This area, and the production plant proper were not inspected.

EFFLUENT FIELD TESTS

There was no discharge from Outfall 002 at the time of this inspection.

D.O. _____ mg/L pH _____ SU Temp. _____ °C Flow _____ MGD
 Contact Chlor. Residual: _____ mg/L Final Chlorine Residual: _____ mg/L

Lab. Time/Initials/documentation: _____

COMMENTS

Inspection was conducted in response to a report of an unusual discharge (effluent quality from OF 002) from the Virginia Department of Health Division of Shellfish Sanitation on July 5, 1999. Subsequent discussions with Omega Protein revealed that at that time, their diffusers were out of service. In order to assess and repair the diffusers, the level of the lagoon was dropped using the original (lower) discharge elevation valve (a higher discharge elevation valve was installed to increase detention time). The quality of the discharge was reported to be black and full of solids. As reported on page one of this report, the diffusers have been repaired; however, it appeared the lagoons had not yet stabilized.

During this inspection, Mr. Barnes reported that the lagoon is intentionally discharged when DEQ inspections are conducted so that the inspector can observe a discharge. I instructed Mr. Barnes to discharge the lagoon in a manner so as to ensure the best quality discharge, and that a discharge was not required for DEQ inspections.

Mr. Barnes and I also discussed the facility's sample protocol/sample schedule for collection of composite sample at Outfall 002 (lagoon). Currently, the compositor runs full time. At the end of each composite cycle, Mr. Jett pulls the sample dumps it on the ground and resets the compositor. A decision to retain a composite sample for reporting purposes (Sample Frequency is 2/M) is made by Mr. Steve Jones, General Manager. Reportedly, Mr. Jett's job duties and an intermittent production schedule are primary criteria to retain a composite sample on any particular day. At my request, and by letter dated July 19, 1999 (attached), Mr. Barnes provided a written sample schedule. By this report, this schedule is acceptable.

OUTFALL/RECEIVING WATER CONDITION

Comments: There was no discharge from Outfall 002 during the inspection. The receiving stream appeared to be normal; however, the substrate immediately below OF 002 was dark in color.

Samples Taken? ☐ Yes ☒ No

Photographs Taken? ☐ Yes ☒ No

GENERAL RECOMMENDATIONS

1. Implement sample schedule provided in Mr. Barnes' letter dated July 19, 1999, and ensure the following: Samples which are representative of the final discharge in both quantity and quality are required by the Permit. Field parameters must be measured by a grab (access issues) collected from the discharge structure. Temperature must be measured within one minute of grab and should be collected in a large container (one gallon); pH must be measured immediately (15-minute holding time). Portions of the composite sample to be analyzed for ammonia, total nitrogen, and total phosphorus must be poured from the composite sample container to their respective containers within 15 minutes of composite end time and properly preserved (sulfuric acid to a pH of < 2 SU). The composite start and end times must be documented in laboratory records.
2. In the future, any unusual discharge or unusual operating condition (such as equipment failure) which could adversely affect effluent quality should be reported to the DEQ - Kilmarnock Office.

COMPLIANCE RECOMMENDATIONS

There are no compliance recommendations at this time.

COPIES:

DEQ - OWPS (attn: W. Purcell)
DEQ - Enforcement (C. Akers)
DEQ - Kilmarnock Office (attn: D. Mosca)

MEMORANDUM

Piedmont Regional Office, Water Division
Department of Environmental Quality
4949-A Cox Road, Glen Allen, Virginia 23060

original - full size
p. 47

SEP 16 1997

SUBJECT: Zapata Protein, Inc., Permit #VA0003867, WET limit
Special Condition

TO: Denise Mosca, KRO/DEQ

FROM: Mason Harper, PRO/DEQ *MH*

DATE: September 10, 1997

COPIES: J.R. Bell, Jr., PRO; R. Jenkins, PRO; D. DeBiasi,
OWPS/TMP; Permit File

BACKGROUND:

The permit for the subject facility is currently in the process of reissuance. When the permit was last reissued on November 2, 1992, a Toxics Management Program (TMP) special condition was included. The TMP required quarterly acute and chronic toxicity testing using Cyprinodon variegatus and Mysidopsis bahia be performed on outfalls 001, 002, and 004. After the first two quarterly analyses were performed, effluent from outfall 002 exhibited sufficient toxicity to warrant the implementation of a Toxicity Reduction Evaluation (TRE).

The permittee was required to submit a TRE plan by May 10, 1994. That plan was reviewed and approved by DEQ staff on June 29, 1994. At that time Zapata Protein was asked to implement the TRE plan, and was allowed a three year period (until June, 1997) to complete the evaluation. The permittee was also notified that a Whole Effluent Toxicity (WET) limit would be effective upon completion of the TRE.

Zapata Protein has been actively involved in the TRE on outfall 002 since 1994. Some of the principal actions taken by Zapata Protein to reduce effluent toxicity as part of the TRE include the following:

- 1) Implemented BMPs to reduce waste loading to the treatment ponds, such as sludge removal and adjustments to the plant's evaporator equipment.
- 2) Improved waste treatment efficiency by installation of surface aeration equipment.
- 3) Performed treatability studies to investigate if nutrient addition and/or bioaugmentation will improve the nitrification of ammonia in the ponds.

By letter dated March 24, 1997, Zapata Protein requested additional time to complete improvements and treatability study

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associated with the E. After considering the request, DEQ staff extended the deadline for TRE completion from June, 1997 to no later than January 15, 1998. Accordingly, in the reissued permit the Whole Effluent Toxicity (WET) limit would also become effective on January 15, 1998.

WET LIMIT DERIVATION:

The limit recommended for inclusion in the reissued permit was developed using the most recent guidance from the Office of Water Protection Services. This guidance was written in order to maintain consistency between the methods for derivation of limits for specific chemicals and for whole effluent toxicity. The guidance follows a statistical approach for WET limit development as recommended by EPA's Technical Support Document for Water Quality-Based Toxics Control.

The acute Whole Effluent Toxicity of a minimum No Observed Adverse Effect Concentration (NOAEC) of 100% effluent was derived with the use of the attached Lotus Release 5 spreadsheet, which self calculates when the data are entered. Acute and chronic toxicity test results from the August, 1993, TMP monitoring were used to calculate an acute to chronic ratio for WET derivation. Due to the sluggish tidal mixing which occurs at the site, it is the staff's best professional judgement that the No Observed Adverse Effect Concentration (NOAEC) WET test endpoint of 100% is most protective against both acute and chronic toxicity.

Recommendations:

- 1) Please incorporate the special condition language and monitoring requirements for Whole Effluent Toxicity into the draft permit.
- 2) I recommend a permit limit for acute Whole Effluent Toxicity be a minimum No Observed Adverse Effect Concentration (NOAEC) of 100% effluent. The test organism shall be Mysidopsis bahia. Sample frequency should be quarterly (when plant is operational) and sample type should be 24 hour composite.

Spreadsheet for determination of WET test endpoints or WET limits

Lotus Release 5 - Developed by OWPS-TMP
Revision Date: 01/02/97
File: TMP-WET5.wk4 (MIX.EXE required also)

ENDPOINTS / LIMITS

ACUTE 100% = NOAEC
CHRONIC 1.728 TUC
BOTH* 6.9768 TUC

*In cases where the ACR is derived from actual data, the combined limit expressed as TUC may be sufficient to protect for both acute and chronic toxicity.

Enter data in the cells with blue type:

Entry Date: 09/05/97 Plant Flow: 0.2 MGD
Facility Name: Zapata Haynie Corp. Acute 1Q10: NA MGD
VPDES Number: VA0003867 Chronic 7Q10: NA MGD
Outfall Number: 2

% Flow to be used from MIX.EXE
Acute 100 %
Chronic 100 %

Difuser / modeling study?
Enter Y/N N
Acute 1 :1
Chronic 50 :1

To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results, acute and chronic, which use the same organism, tested at the same temperature.

Table 1. ACR using Vertebrate data

| Set# | LC50 | NOEC | Test ACR | Logarithm | Geomean | Antilog ACR to Use |
|------|------|------|----------|------------|---------|--------------------|
| 1 | 35.4 | 1 | 35.4 | 3.56671182 | 3.56671 | 35.4 |
| 2 | NA | NA | NA | NA | NA | NA |
| 3 | NA | NA | NA | NA | NA | NA |
| 4 | NA | NA | NA | NA | NA | NA |
| 5 | NA | NA | NA | NA | NA | NA |
| 6 | NA | NA | NA | NA | NA | NA |
| 7 | NA | NA | NA | NA | NA | NA |
| 8 | NA | NA | NA | NA | NA | NA |
| 9 | NA | NA | NA | NA | NA | NA |
| 10 | NA | NA | NA | NA | NA | NA |

Enter ACR for vertebrate data:

0

Table 2. ACR using Invertebrate data

| Set# | LC50 | NOEC | Test ACR | Logarithm | Geomean | Antilog ACR to Use |
|------|------|------|----------|-----------|----------|--------------------|
| 1 | 17 | 1 | 17 | 2.833213 | 2.833213 | 17 |
| 2 | NA | NA | ERR | ERR | ERR | ERR |
| 3 | NA | NA | ERR | ERR | ERR | ERR |
| 4 | NA | NA | NA | NA | ERR | ERR |
| 5 | NA | NA | NA | NA | ERR | ERR |
| 6 | NA | NA | NA | NA | ERR | ERR |
| 7 | NA | NA | NA | NA | ERR | ERR |
| 8 | NA | NA | NA | NA | ERR | ERR |
| 9 | NA | NA | NA | NA | ERR | ERR |
| 10 | NA | NA | NA | NA | ERR | ERR |

Enter ACR for invertebrate data:

17

IWCa 100 % Plant flow/plant flow + 1Q10
IWCc 100 % Plant flow/plant flow + 7Q10

Dilution, acute 1 100/IWCa
Dilution, chronic 1 100/IWCc

WLAa 0.3 Instream criterion (0.3 TUa) X's Dilution, acute
WLAc 1 Instream criterion (1.0 TUC) X's Dilution, chronic
WLAa,c 5.1 ACR X's WLAa - converts acute WLA to chronic units

ACR -acute/chronic ratio 17 LC50/NOEC (Default is 10 - if data is available, use tables above)
CV-Coefficient of variation 0.6 Default of 0.6
Constants eA 0.57 Default = 0.57
eB 0.72 Default = 0.72
eC 2.4 Default = 2.4

LTAa,c 2.907 WLAa,c X's eA
LTAc 0.72 WLAc X's eB
MDL** with LTAa,c 6.9768 TUC NOEC = 14.3332 (Protects from acute/chronic toxicity)
MDL** with LTAc 1.728 TUC NOEC = 57.8704 (Protects from chronic toxicity)

NOTE: If the IWCa is >33%, use the test NOAEC = 100%

** The Maximum Daily Limit is calculated the lowest Long Term Average, multiple the constant eC. The LTAa,c and the M using it are driven by the ACR.

IF A DIFUSER EXISTS, THE MIX RATIO IS USED IN THE CALCULATION BELOW:

Dilution, acute: 1 (if the acute dilution is 20:1, 20 should be here)
Dilution, chronic: 50 (if the chronic dilution is 25:1, 25 should be here)

IWCa: 100 % 100/acute dilution
IWCc: 2 % 100/chronic dilution

WLAa 0.3 TUa Instream criterion (0.3 TUa) X's Dilution, acute
WLAc 50 TUC Instream criterion (1.0 TUC) X's Dilution, chronic
WLAa,c 5.1 TUC ACR X's WLAa

ACR (ac/chr ratio) 17 LC50/NOEC - Default = 10
Coeff. of variation 0.6 Default is 0.6
Constants: eA 0.57 Default is 0.57
eB 0.72 Default is 0.72
eC 2.4 Default is 2.4

LTAa,c 2.907 TUC WLAa,c X's eA
LTAc 36 TUC WLAc X's eB
MDL** with LTAa,c 6.9768 TUC NOEC = 14.3332
MDL** with LTAc 86.4 TUC NOEC = 1.157407

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TUC to TUa

MDL with LTAa,c 0.4104 TUa LC50 = 243.685 % Use NOAEC=100%
MDL with LTAc 0.101647 TUa LC50 = 983.796 % Use NOAEC=100%

IF ONLY ACUTE ENDPOINT / LIMIT IS NEEDED, CONVERT MDL FROM TUC to TUa

MDL with LTAa,c 0.4104 TUa LC50 = 243.6647 Use NOAEC=100%
MDL with LTAc 5.082353 TUa LC50 = 19.67593

1. Whole Effluent Toxicity Effluent Limitation and Monitoring Requirements (Acute WET Limit)

- a. The Whole Effluent Toxicity limit for outfall 002 shall be a minimum No Observed Adverse Effect Concentration (NOAEC) of 100% effluent. This is a final limit with an effective date of January 15, 1998.
- b. Commencing within 3 months of the effective date established in a. above, the permittee shall conduct quarterly acute toxicity tests using 24 hour flow-proportioned composite samples of final effluent from outfall 002. The acute toxicity tests shall be 48-hour static tests using Mysidopsis bahia, and shall be conducted using a minimum of 20 test organisms per exposure and a minimum of 4 replicates of a suitable control and 100% effluent. The No Observed Adverse Effect Concentration shall be reported on the DMR for the month following the quarter in which the test is performed. Report either 100% or less than 100%. Two copies of a detailed report concerning the conduct of the test shall accompany the results. Technical assistance in developing the procedures for these tests shall be provided by the Department of Environmental Quality, if requested by the permittee. Test protocols shall be submitted for approval no later than two months before the effective date of the limit.
- c. The No Observed Adverse Effect Concentration (NOAEC) for acute toxicity shall be 100% effluent. The effluent will comply with the WET limit if the survival of test organisms in both the control and 100% effluent exposures equals or exceeds 90% . If survival in the effluent is less than 90% and this value is significantly different from the control survival, as determined by hypothesis testing, the NOAEC is less than 100% and the effluent is not in compliance with the WET limit. Tests in which control survival is less than 90% are not acceptable.
- d. In the event that quarterly WET testing as in b. above is not possible due to lack of operations at the facility, the permittee shall notify the Department of Environmental Quality's Kilmarnock Regional Office with the DMR submitted for the month following the quarter in which the test was to have been performed.
- e. This permit may be modified or revoked and reissued to include pollutant specific limits in lieu of a

WET limit should it be demonstrated that toxicity is due to specific parameters. The pollutant specific limits must control the toxicity of the effluent.

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MEMORANDUM

Piedmont Regional Office, Water Division
Department of Environmental Quality
4949-A Cox Road, Glen Allen, Virginia 23060

SUBJECT: Toxicity Test Data Review and Toxics Monitoring
Program, Zapata Protein, Inc., Permit #VA0003867

TO: Denise Mosca, KRO/DEQ

FROM: Mason Harper, PRO/DEQ JMH

DATE: September 10, 1997

COPIES: D. DeBiasi, OWPS/TMP, Permit File

GENERAL:

Zapata Protein, Inc., is a fish processing factory located in Reedville, Virginia. Menhaden are caught by boats in the Chesapeake Bay and Atlantic, brought to the plant, and cooked to render fish oil and fish meal. These products are then sold for use in animal feed and several other applications. The operations are seasonal depending on the availability of menhaden, and generally run between May and November.

There are currently three outfalls in use which are permitted by VPDES permit #VA0003867. All three outfalls discharge to Cockrells Creek. Outfall 001 consists of scrubber contact cooling water and discharges up to 3.4 MGD. Outfall 002 discharges 0.2 MGD of treated industrial wastewater (condensate from evaporators). The effluent is treated by aerated lagoon prior to discharge. Outfall 004 consists entirely of non-contact cooling water (9 MGD) from the evaporators. A fourth outfall is permitted (003) but has not been used since 1989.

The permit for this facility was reissued on November 2, 1992, and included a Toxics Management Program (TMP) special condition. The TMP required quarterly acute and chronic toxicity testing using Cyprinodon variegatus and Mysidopsis bahia be performed on outfalls 001, 002, and 004. Concurrent chemical analyses were also required.

DATA SUMMARY:

This data review includes the results of the third and fourth sets of quarterly biological analyses on outfall 001 and 004. The first and second set of tests for these two outfalls were reviewed in past reports. Those results are included in the tables below. In addition, one make up test (for previously invalidated test) and two annual tests for outfall 001 were reviewed. The facility has been conducting a Toxicity Reduction Evaluation (TRE) on outfall 002 since the summer of 1994, and was exempted from further TMP testing pending completion of the TRE.

See Tables 1. through 5. below for a summary of test results on the two outfalls. All tests reviewed for this report were performed by Biological Monitoring, Inc., of Blacksburg, Virginia, and were conducted in accordance with approved protocol.

DISCUSSION/CONCLUSIONS:

Test results from outfall 001 indicate that this effluent was not acutely toxic to either indicator organism. All ten of the valid acute tests conducted to date have yielded LC50 values greater than 100% effluent concentration. In addition, survival in the undiluted effluent ranged between 85% and 100% in all acute tests, indicating no dose response of either indicator organism occurred to the effluent on any sample.

Effluent from outfall 001 did adversely affect survival, reproduction and/or growth of the indicator organisms in eight of the total of ten chronic tests. Because the Instream Waste Concentration (IWC) of this discharge is 2%, chronic toxicity instream would only be predicted to have occurred in the July, 1993 test with M. bahia.

Test results from outfall 004 indicate that this effluent was not acutely toxic to either indicator organism. Eight of the required total of eight tests have yielded LC50 values greater than 100% effluent concentration. Survival in the undiluted effluent ranged between 95% and 100%.

Chronic test results from outfall 004 yielded NOEC values (no adverse affect) equal to 100% effluent in five of the total of eight chronic tests conducted. Because the NOEC values in the remaining three tests were equal or greater than the IWC of 2%, chronic toxicity would not be predicted.

RECOMMENDATIONS:

Both outfalls 001 and 004 have successfully met the decision criteria for acute and chronic toxicity as defined in the TMP permit special condition. According to the TMP in the current permit, if outfall 004 passes the decision criteria after the initial four quarters testing, then no further testing will be required.

When the permit for this facility is next reissued, a TMP special condition should be included. Outfall 004 will be exempted from further TMP monitoring because it consists entirely of non-contact cooling water and has passed the initial four quarters screening. Annual acute and chronic toxicity tests should continue to be performed on outfall 001 during the next permit cycle. I recommend the organism Cyprinodon variegatus for use in both the acute and chronic testing.

I have included special biological monitoring conditions in the draft TMP for outfall 003. This outfall will continue to be permitted in the upcoming permit, and will give the permittee the option of transporting untreated process wastewater to a

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designated zone in the Chesapeake Bay. The effluent which would be transported is identical to that which is currently treated in aerated lagoons and discharged via outfall 002. Because outfall 002 (treated industrial wastewater) has demonstrated acute toxicity and is currently in TRE, one may infer that the untreated wastewater could be toxic also. In the draft TMP I recommend that toxicity tests be conducted on the first four discharges which may occur via this outfall. If the results of those tests indicate actual or potential toxicity, then further discharges would be prohibited until toxicity reduction (TRE/Instream Impact Study) has been demonstrated.

Please incorporate the attached TMP into the draft permit.

Table 1. Acute toxicity test results from effluent collected at outfall 001.

| <u>Date</u> | <u>Test Organism</u> | <u>Results</u> | <u>% Survival in</u> <u>100%</u> <u>Effluent</u> |
|----------------|----------------------|----------------|--|
| Jul. 14, 1993* | <u>C. variegatus</u> | LC50 > 100% | NA |
| Jul. 14, 1993* | <u>M. bahia</u> | LC50 > 100% | NA |
| Aug. 15, 1993* | <u>C. variegatus</u> | LC50 > 100% | NA |
| Aug. 15, 1993* | <u>M. bahia</u> | LC50 > 100% | NA |
| June 25, 1994 | <u>C. variegatus</u> | LC50 > 100% | 100% |
| June 25, 1994 | <u>M. bahia</u> | LC50 > 100% | 100% |
| Aug. 30, 1994 | <u>C. variegatus</u> | LC50 > 100% | 100% |
| Aug. 30, 1994 | <u>M. bahia</u> | LC50 > 100% | 100% |
| June 20, 1995 | <u>M. bahia</u> | LC50 > 100% | 100% |
| July 24, 1996 | <u>M. bahia</u> | LC50 > 100% | 85% |

Table 2. Chronic toxicity test results from effluent collected at outfall 001.

| <u>Date</u> | <u>Test Organism</u> | <u>Results</u> | <u>% Survival in</u> <u>100%</u> <u>Effluent</u> |
|---------------|----------------------|----------------|--|
| Jul. 8, 1993* | <u>C. variegatus</u> | NOEC = 0% | NA |
| Jul. 8, 1993* | <u>M. bahia</u> | Invalid | NA |
| Aug. 8, 1993* | <u>C. variegatus</u> | NOEC = 51% | NA |
| Aug. 8, 1993* | <u>M. bahia</u> | NOEC = 51% | NA |
| June 22, 1994 | <u>C. variegatus</u> | NOEC = 2% | 70% |
| June 22, 1994 | <u>M. bahia</u> | NOEC = 100% | 95% |
| Aug. 24, 1994 | <u>C. variegatus</u> | NOEC = 100% | 90% |
| Aug. 24, 1994 | <u>M. bahia</u> | NOEC = 2% | 25% |
| Oct. 5, 1994 | <u>M. bahia</u> | NOEC = 100% | 97% |
| June 20, 1995 | <u>C. variegatus</u> | NOEC = 51% | 5% |
| Aug. 7, 1996 | <u>C. variegatus</u> | NOEC = 51% | 0% |

Table 3. Acute toxicity test results from effluent collected at outfall 004.

| <u>Date</u> | <u>Test Organism</u> | <u>Results</u> | <u>% Survival in</u> <u>100%</u> <u>Effluent</u> |
|----------------|----------------------|----------------|--|
| Jul. 14, 1993* | <u>C. variegatus</u> | LC50 > 100% | NA |
| Jul. 14, 1993* | <u>M. bahia</u> | LC50 > 100% | NA |
| Aug. 15, 1993* | <u>C. variegatus</u> | LC50 > 100% | NA |
| Aug. 15, 1993* | <u>M. bahia</u> | LC50 > 100% | NA |
| June 25, 1994 | <u>C. variegatus</u> | LC50 > 100% | 100% |
| June 25, 1994 | <u>M. bahia</u> | LC50 > 100% | 100% |
| Aug. 30, 1994 | <u>C. variegatus</u> | LC50 > 100% | 100% |
| Aug. 30, 1994 | <u>M. bahia</u> | LC50 > 100% | 95% |

Table 4. Chronic toxicity test results from effluent collected at outfall 004.

| <u>Date</u> | <u>Test Organism</u> | <u>Results</u> | <u>% Survival in</u> <u>100%</u> <u>Effluent</u> |
|---------------|----------------------|-------------------|--|
| Jul. 8, 1993* | <u>C. variegatus</u> | NOEC = 100% | NA |
| Jul. 8, 1993* | <u>M. bahia</u> | NOEC = 100% | NA |
| Aug. 8, 1993* | <u>C. variegatus</u> | NOEC = 51% | NA |
| Aug. 8, 1993* | <u>M. bahia</u> | NOEC = 2% | NA |
| June 22, 1994 | <u>C. variegatus</u> | NOEC = 2% (grth.) | 80% |
| June 22, 1994 | <u>M. bahia</u> | NOEC = 100% | 100% |
| Aug. 24, 1994 | <u>C. variegatus</u> | NOEC = 100% | 80% |
| Aug. 24, 1994 | <u>M. bahia</u> | NOEC = 100% | 98% |

*Previously reviewed toxicity tests.

1. Toxics Management Program

a. Biological Monitoring (outfall 003):

- (1) If the permittee elects to discharge effluent (evaporator condensate only) via outfall 003, then the following testing will be required for each discharge event until the first four discharge events have occurred:

Two acute toxicity tests using grab samples of final effluent from outfall 003. The acute tests shall be 48-hour static tests using Cyprinodon variegatus and Mysidopsis bahia, both conducted in such a manner and at sufficient dilutions for calculation of a valid LC₅₀.

- (2) The following criterion shall be used in evaluating the toxicity test data generated in (1) above:

LC₅₀ greater than or equal to 100% effluent concentration in six of the total of eight acute toxicity tests

- (3) If effluent from outfall 003 fails the above criterion it shall be considered to have demonstrated actual or potential toxicity. Accordingly, continued discharge of this effluent via outfall 003 shall be prohibited. In order to resume discharging from this outfall the permittee must:

- (a) assure the absence of actual or potential toxicity, or
- (b) demonstrate that there is, or would be, no adverse impact from the discharge on all reasonable and beneficial uses of the state's waters.

b. Biological Monitoring (outfall 001):

- (1) In accordance with the schedule in d. below and commencing within three months of the effective date of this permit and continuing for the duration of the permit, the permittee shall conduct annual acute and chronic toxicity tests using 24-hour flow-proportioned samples of final effluent from outfall 001. The acute tests shall be 48-hour static tests using Cyprinodon variegatus, conducted in such a manner and at sufficient dilutions for

calculation of a valid LC_{50} . The chronic shall be static renewal tests using Cyprinodon variegatus. The C. variegatus test shall be a 7-day larval survival and growth test. These chronic tests shall be conducted in such a manner and at sufficient dilutions to determine the "No Observed Effect Concentration" (NOEC) for survival and growth. The permittee may provide additional samples to address data variability. These data may be included in the evaluation of effluent toxicity. The results of all such additional analyses shall be reported. Technical assistance in developing the procedures for these tests shall be provided by the Department of Environmental Quality staff, if requested by the permittee. Test protocols and the use of alternative species shall be approved by the Department of Environmental Quality staff prior to initiation of testing.

- (2) In the event that annual testing (1) above or quarterly testing as in (4) below is not possible due to lack of operations at the facility, the permittee shall notify the Department of Environmental Quality's Kilmarnock Regional Office with the DMR submitted for the month following the quarter in which the tests were to have been performed. In such cases, the schedule shall be adjusted ahead by one quarter. In the event that the plant is not in operation for two or more consecutive quarters, the procedures for notification of the regional office and schedule adjustments shall be repeated for each quarter in which the plant is not in operation.
- (3) If, in the testing according to b.(1) above, any of the annual acute toxicity tests yields an LC_{50} of less than 100% effluent, or any of the annual chronic tests yields an NOEC of less than the IWC of 2%, the test shall be repeated within three months.
 - (a) If the retest also indicates an LC_{50} of less than 100% effluent or an NOEC less than the IWC, quarterly toxicity testing as in b.(4) below shall commence within three months. The results of these tests will be included in the evaluation of the need for toxicity reduction.
 - (b) If the retest does not confirm the results of the first test, then annual testing in accordance with the annual compliance schedule shall resume.

- (4) If required in b.(3)(a) above, the permittee shall conduct quarterly acute and chronic toxicity tests for a period of one year using 24-hour flow-proportioned samples of final effluent from outfall 001. The acute tests shall be 48-hour static tests using Mysidopsis bahia and Cyprinodon variegatus, both conducted in such a manner and at sufficient dilutions for calculation of a valid LC₅₀. The chronic tests shall be static renewal tests using M. bahia and C. variegatus. The M. bahia test shall be a 7-day larval survival, growth and/or fecundity test, and the C. variegatus test shall be a 7-day larval survival and growth test. These chronic tests shall be conducted in such a manner and at sufficient dilutions to determine the "No Observed Effect Concentration" (NOEC) for survival and reproduction or growth. The permittee may provide additional samples to address data variability during the one year period of initial data generation. These data may be included in the evaluation of effluent toxicity. The results of all such additional analyses shall be reported. Technical assistance in developing the procedures for these tests shall be provided by the Department of Environmental Quality staff, if requested by the permittee. Test protocols and the use of alternative species shall be approved by the Department of Environmental Quality staff prior to initiation of testing.
- (5) The following criteria shall be used in evaluating the toxicity test data generated in (4) above:
- (a) LC₅₀ greater than or equal to 100% effluent in six of the total of eight acute toxicity tests, or in at least 75% of the tests conducted, if more than eight tests are conducted.
 - (b) No Observed Effect Concentration (NOEC) greater than or equal to the Instream Waste Concentration (IWC) of 2%, in six of the total of eight toxicity tests, or in at least 75% of the tests if more than eight tests are conducted.

Any effluent failing either of the above criteria shall be considered to have demonstrated actual or potential toxicity and a Toxicity Reduction Evaluation (TRE) will be required.

- (6) If, prior to completing the monitoring requirements specified in b.(4) above, it is determined that the

effluent fails the decision criteria outlined in b.(5), a TRE may be required. Upon notification by the Department of Environmental Quality that a TRE is required, the permittee shall initiate a TRE and may stop conducting the toxicity tests of b.(4).

- (7) Following successful completion of the testing of outfall 001 as in (5)(a) and (b) above, the permittee shall resume annual acute and chronic toxicity testing of the outfall. The first annual tests shall be conducted within three months from the last quarterly tests. The test organisms shall be those identified as the most sensitive species from the quarterly acute and chronic tests, or alternative species approved by the Department of Environmental Quality staff. Annual testing of the outfall is not required in cases where the need for a TRE of the outfall has been established.
- (8) If, in the testing according to b.(7) above, any of the annual acute toxicity tests yields an LC_{50} of less than 100% effluent, or any of the annual chronic tests yields an NOEC less than the IWC of 2%, the test shall be repeated within three months.
 - (a) If the retest also indicates an LC_{50} of less than 100% effluent or an NOEC less than the IWC, quarterly toxicity testing as in b.(4) above shall commence within three months. The results of these tests will be included in the evaluation of the need for toxicity reduction.
 - (b) If the retest does not confirm the results of the first test, then annual testing in accordance with the annual compliance schedule shall resume.

b. Toxicity Reduction Evaluation (outfall 001):

- (1) If the results of this Toxics Management Program or other available information indicate that the wastewaters are actually or potentially toxic, the permittee shall submit:
 - (a) a Toxicity Reduction Evaluation (TRE) plan, or
 - (b) at the permittee's option, an instream impact study plan, and
 - (c) an accompanying implementation schedule

within 120 days of the notification of such a determination by the Department of Environmental

Quality.

- (2) The requirement of this plan shall be to:
 - (a) assure the absence of actual or potential toxicity, or
 - (b) to demonstrate that there is, or would be, no adverse impact from the discharge on all reasonable and beneficial uses of the state's waters.
- (3) Upon completion of the review of the plan, the permittee shall implement the plan and the permit may be modified or alternatively revoked and reissued in order to reflect appropriate permit conditions and a compliance schedule.

d. Reporting Schedule:

The permittee shall submit 2 copies of the results of the toxicity tests specified for outfall 001 in this Toxics Management Program in accordance with the following schedule:

| | | |
|-----|---|--|
| (1) | Submit toxicity test protocols for approval | Within two months following the effective date of the permit |
| (2) | Conduct first annual biological tests | Within three months following the effective date of the permit |
| (3) | Submit results of d.(2) | With the Discharge Monitoring Report (DMR) for the fourth month following the effective date of the permit |
| (4) | Conduct subsequent annual biological tests | Within subsequent twelve month periods from d.(2) |
| (5) | Submit results of d.(4) | With the DMRs submitted every twelve months from d.(3) |

P. 621

To: Denis M. Mosca@KLMCK@DEQ
Cc:
bcc:
From: Jody L. Bryan@RCHMD@DEQ
Subject: Omega Protein
Date: Thursday, August 13, 1998 14:32:06 EDT
Attach:
Certify: Y
Forwarded by:

I looked at the toxicity test results. No need to change TMP requirements at this time.

See ya later...gotta hustle!

max flows
realistic temps
(from DMRS)

Omega Temp Std - Cooling Water Flows

001 = contact cooling water max flow 7.17 MGD

004 & 005 = noncontact cooling water max flows 12.4, 12.9 MGD
total Qd = 32.47

from DMRS -

| | | | | |
|---------|------|------|------|------|
| | 5/98 | 6/98 | 7/98 | 8/98 |
| 001 avg | 27.7 | 32.7 | 37.3 | 35.3 |
| max | 30 | 39 | 42 | 40.0 |

use 45° for both Cd

| | | | | |
|---------|------|------|------|------|
| 004 avg | 28.9 | 30.4 | 36.3 | 34.7 |
| max | 34 | 37 | 43 | 39 |

Cs = 90th percentile 28.5

$$C_m = \frac{Q_s C_s + Q_d C_d}{Q_s + Q_d}$$

$$= \frac{(288.34)(28.5) + (32.47)(45)}{288.34 + 32.47}$$

$$= 30.17 < 31.5 \text{ OK}$$

288.34 MGD use C
no flow of Cackrell
Creek, from 1992 Flow
Fact Sheet 31

at low temps, say, 8°C

| | | |
|---------|-------|-------|
| | 10/97 | 11/97 |
| max 001 | 35.0 | 27.0 |
| max 004 | 31.0 | 24.0 |

| |
|-------|
| use |
| 12/97 |
| 26.0 |
| 22.0 |

$$C_{m_{004/005}} = \frac{288.34(8^\circ) + (25.3)(22^\circ)}{288.34 + 25.3} = 9.13$$

$$C_{m_{001}} = \frac{(288.34 + 25.3)(9.13) + (7.17)(26.0)}{(288.34 + 25.3) + 7.17}$$

$$= 9.51^\circ\text{C} < 11^\circ\text{C} \text{ OK}$$

p. 64

Jon VanSoestbergen@RCHMD@DEQ

C:
From: Maynard D. Phillips@WPS@DEQ
Subject:
Date: Monday, September 28, 1998 8:45:07 EDT
Attach:
Certify: N
Forwarded by: Jon VanSoestbergen@RCHMD@DEQ

Forwarded to: Denise M. Mosca@KLMCK@DEQ
cc: Maynard D. Phillips@WPS@DEQ
Forwarded date: Monday, September 28, 1998 10:23:12 EDT
Comments by: Jon VanSoestbergen@RCHMD@DEQ
Comments:

Denise:

Following are Dale's comments regarding my 9/17/1998 memo and work on the Zapata wasteload allocation review and CORMIX analysis. If you include this e-mail as part of the file I don't see any reason to rewrite my 9/17/1998 memo. Could you please make a copy of the 9/17/1998 memo and attachment (24 pages) and send it to me. I forgot to make a copy before I gave you the package when you were here last week.

To address Dale's comments/questions:

Dale's explanation as to why the long diffuser is better should be adequate documentation regarding this issue.

The circular mixing zone I describe in my 9/17/1998 is as measured from the midpoint of the diffuser. CORMIX defines the origin of the coordinate (x-y-z) plane as this point. S (the hydrodynamic centerline dilution) is then as measured from this origin. Therefore, I believe my definition of the mixing zone as a circle measured around the diffuser midpoint is not incorrect. However, describing the mixing zone as extending from the diffuser in any direction is also acceptable, and would have the effect only of extending the boundary slightly further out in the y-direction toward the middle of the stream, in theory resulting in a slightly larger mixing zone. Practically, though, the difference between the two is of the order of 10 feet in the y-direction, which in the context of water quality monitoring and model accuracy is negligible. In any event, the final defined mixing zone will be a function of the final diffuser design submitted by Zapata. You should provide this final design to me for analysis when it is received, unless some sort of mixing zone analysis is provided as documentation with the design.

I will consider this e-mail as finalizing my 9/17/1998 memorandum and my work on this project. If you have any questions or need additional information, please don't hesitate to call me.

Jon.

To: Maynard D. Phillips@WPS@DEQ
Cc: Denise M. Mosca@KLMCK@DEQ
Curtis J. Linderman@RCHMD@DEQ
Bcc:
From: Jon VanSoestbergen@RCHMD@DEQ
Subject: Zapata CORMIX analysis
Date: Thursday, September 17, 1998 9:34:00 EDT
Attach:
Certify: N
Forwarded by:

Dale:

I am sending you the results of the CORMIX analysis I did for Zapata today. I have not yet sent the information to Denise pending your review. Please let me know if you have any concerns with the analysis. I will wait to send the package to Denise until I hear from you one way or the other.

In summary, I ended up analyzing two different diffuser designs. The first approximates the design that was included in the package provided by Denise, and the second is a design of my own. The first ("short diffuser") results in a dilution ratio of 50:1. The second ("long diffuser") results in a dilution ration of 100:1. The mixing zone for the first is 25 feet, for the second, 20 feet. The ratio used by the permit writer will depend on the final diffuser design selected by the permittee.

As we discussed yesterday, I analyzed each design 1 hr before slack tide, at slack tide, and 1 hr after slack tide. Then I averaged the most conservative two results for each diffuser to obtain the final dilution ratio. This results in a dilution ratio based on a 1-hr average flow under critical conditions, which best reflects the way the acute standard is written. My recommendation is that the selected dilution ratio be used for both acute and chronic WLA determination.

Thanks for your help on this.

Jon.

P. 66

MEMORANDUM


DEPARTMENT OF ENVIRONMENTAL QUALITY *Piedmont Water Regional Office*

4949-A Cox Road, Glen Allen, VA 23060-6296

804/527-5020

SUBJECT: Cockrell's Creek Wasteload Allocations and Dilution Analysis
Zapata Protein (USA), Inc. Discharge (VA0003867)

TO: Denise Mosca

FROM: Jon van Soestbergen 

DATE: September 17, 1998

COPIES: Dale Phillips, Curt Linderman

Per your request, I have reviewed the BOD wasteload allocations for the subject discharge to Cockrell's Creek. I also constructed a CORMIX model to analyze dilution ratios at the discharge associated with different diffuser designs. Two discharges (Ampro Fisheries and Zapata Protein) previously competed for the available assimilative capacity of the receiving stream, and previous models and analyses simulated both discharges to allocate wasteloads. However, the Ampro discharge was terminated. The purpose of this review was to determine if the BOD wasteload previously allocated to Ampro was available in part, or in total, to Zapata. The CORMIX analysis of a diffuser for outfall number 002 was performed to determine the dilution ratio for establishing wasteload allocations for conservative parameters.

BOD Wasteload Allocation Review

In September 1976, the Virginia Institute of Marine Sciences (VIMS) completed a mathematical water quality study of the Great Wicomico River and Cockrell's Creek. The model determined that an average of 5,000 lbs/day of BOD₅ would maintain water quality standards in the upper layer of the creek, which was the only layer used to determine the pollutant loading to the creek. Of this total, 4,900 lbs/day would be allocated to Ampro (then known as Standard Products) and Zapata.

My review of the available information leads me to conclude that the total allowable loading to Cockrell's Creek is 5,000 lbs/day of BOD₅, regardless of the point of discharge. Therefore, with the termination of the Ampro discharge, the entire 4,900 lbs/day previously allocated to the two discharges is available for allocation to Zapata.

CORMIX Diffuser Analysis

Zapata currently proposes to discharge through a total of four outfalls to Cockrell's Creek, but only outfall 002 was considered for a diffuser. The proposed discharge flow from this outfall is 0.300 mgd. The complex design of the diffuser included with the permit fact sheet can not be accurately analyzed using the CORMIX model. However, by simplifying the design somewhat, the expected dilution the diffuser will provide could be estimated. In addition to analyzing the design of this diffuser, a modified design was analyzed which affords better dilution in the near field.

Two diffuser designs were analyzed; one which closely approximates the design included in the fact sheet ("short diffuser") and one which affords better dilution ("long diffuser"). For each case, dilution was analyzed relative to one-hour averages under critical conditions, which most closely approximates the way the acute standards are written.

"Short Diffuser" - This diffuser design consists of a 12-inch diameter pipe extending 35 feet perpendicular to the east bank of the creek into water of approximately 5 foot depth. The diffuser line (the part with holes) starts 15 feet from the shore and extends to the end of the diffuser (20 feet). There are 13 holes of 4 inch diameter in the top of the pipe, and the end is blocked such that all flow is directed upward through the diffuser ports (holes). A rough sketch of the diffuser is attached.

This "short diffuser" design results in a dilution of 50:1 at the boundary of the mixing zone. This dilution ratio should be used to determine both acute and chronic WLAs for the discharge. The associated mixing zone boundary is 7.62 meters (25 feet) measured in a circle from the diffuser midpoint.

"Long Diffuser" - This diffuser consists of a 12-inch diameter pipe extending 60 feet perpendicular to the east bank of the creek, also into water of approximately 5 foot depth. The diffuser line starts 20 feet from shore and extends to the end of the diffuser (40 feet). There are 8 holes of 4 inch diameter, located such that flow will be directed in a 45 degree angle toward the water surface in the downstream direction during ebb tide. Again, the end of the pipe is closed so that all flow discharges through the diffuser ports. A rough sketch of the diffuser is attached.

This "long diffuser" design results in a dilution of 100:1 at the boundary of the mixing zone. This dilution should be used for both the acute and chronic WLAs for the discharge. The associated mixing zone boundary is 6.10 meters (20 feet) measured in a circle from the diffuser midpoint.

Conclusions and Recommendation

The BOD₅ wasteload available to Zapata Protein is 4,900 lbs/day.

If the "short diffuser" is specified, a dilution ratio of 50:1 should be used. For the "long diffuser", the dilution ratio can be increased to 100:1. This shows that different diffuser designs can result in dramatically different dilution ratios, and thus need to be taken into consideration when establishing wasteload allocations and permit limits. As such, it is important that the diffuser design be specified for a wasteload allocation based on a given dilution ratio. It is recommended that the alternate diffuser designs be presented to the permittee so that the advantages of each design can be considered. The designs presented should serve only as preliminary designs. The sketches provided herewith should in no way be construed as final diffuser designs. Alternate designs not yet considered are also possible, and can be submitted by the permittee for subsequent analysis using CORMIX.

Pertinent documentation for the CORMIX analysis is included herewith. Should you have any questions or need additional information, please do not hesitate to contact me.

Attachment:

Notes and Model Runs - Zapata Cormix Diffuser Analysis - Cockrell's Creek, 09/16/1998, 24 pages

ZAPATA CORMIX DIFFUSER ANALYSIS - COCKRELL'S CREEK

9.16.98

VA DEQ - P20

J. VAN SOESTBERGEN

MODEL RUN SUMMARIES.

6 SEPARATE SCENARIOS WERE RUN TO OBTAIN AVERAGE DILUTION RATIOS RELATIVE TO THE ACUTE STANDARD FOR TWO DIFFERENT DIFFUSER DESIGNS. THREE SCENARIOS WERE NECESSARY FOR EACH DESIGN; AFTER-SLACK (FLOW UP THE CREEK), SLACK (NO AMBIENT FLOW), AND BEFORE-SLACK (FLOW DOWN THE CREEK).

TWO DIFFUSER DESIGNS WERE SIMULATED; SHORT DIFFUSER AND LONG DIFFUSER. SHORT DIFFUSER MOST CLOSELY REPRESENTS THE PROPOSED DIFFUSER DESIGN SUBMITTED BY THE PERMITEE. LONG DIFFUSER IS A PRO-DESIGNED ALTERNATIVE THAT RESULTS IN BETTER DILUTION IN THE NEAR-FIELD UNDER EBB OR FLOW-TIDE CONDITIONS.

THE FILES ARE AS FOLLOWS

ZAPATA 1 : AFTER-SLACK ; SHORT DIFFUSER
ZAPATA 2 : SLACK TIDE
ZAPATA 3 : BEFORE-SLACK
ZAPATA 4 : AFTER-SLACK ; LONG DIFFUSER
ZAPATA 5 : SLACK TIDE
ZAPATA 6 : BEFORE SLACK.

ALL SCENARIOS WERE RUN USING CORMIX 2 ; I.E. A MULTIPORT SUBMERGED DIFFUSER.

DESIGN SKETCHES OF THE TWO DIFFUSERS ARE ATTACHED.

ZAPATA CORNIX DIFFUSER ANALYSIS

9-16-98

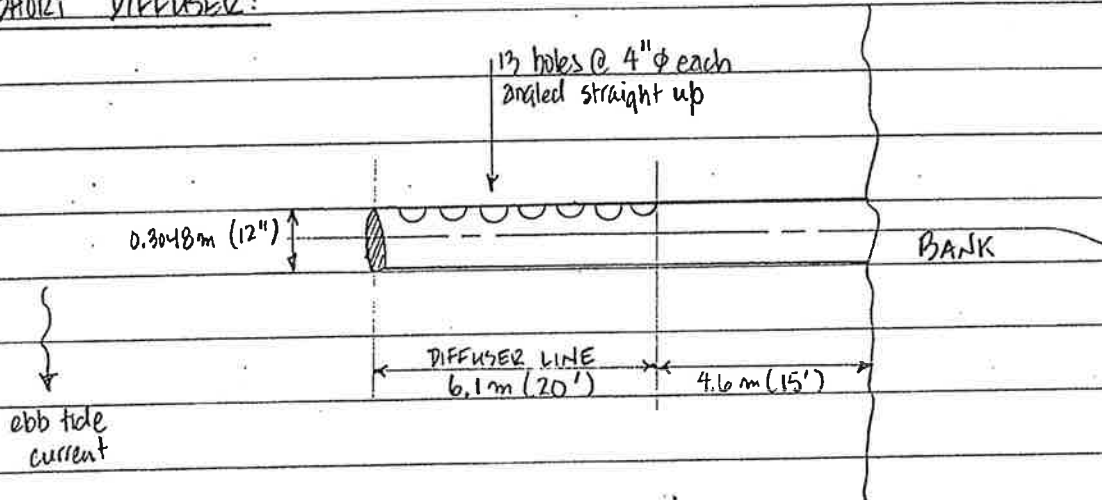
AMBIENT DATA

| | |
|----------------------------|--|
| CHANNEL TYPE : | BOUNDED |
| WIDTH OF CHANNEL: | 503 m |
| CHANNEL APPEARANCE: | FAIRLY STRAIGHT & UNIFORM |
| AVERAGE DEPTH: | 1.524 m |
| ACTUAL DEPTH @ DISCH: | 1.524 m |
| AMBIENT FLOW FIELD: | TIDAL REVERSING |
| PERIOD OF REVERSAL: | 12.4 hr SEMI-DIURNAL |
| FLOW CONDITION : | ① AFTER SLACK ; ② SLACK ; ③ BEFORE SLACK |
| TIME : | 1.0 hr |
| INSTANTANEOUS AMBIENT VEL: | 0.15 m/s |
| MAXIMUM AMBIENT VELOCITY: | 0.30 m/s |
| MANNING'S "n" : | 0.07 |
| DENSITY CONDITIONS: | UNIFORM |
| FRESH OR NON-FRESH: | NON FRESH |
| AMBIENT DENSITY: | 999.7 kg/m ³ |
| WIND SPEED: | 2 m/s |

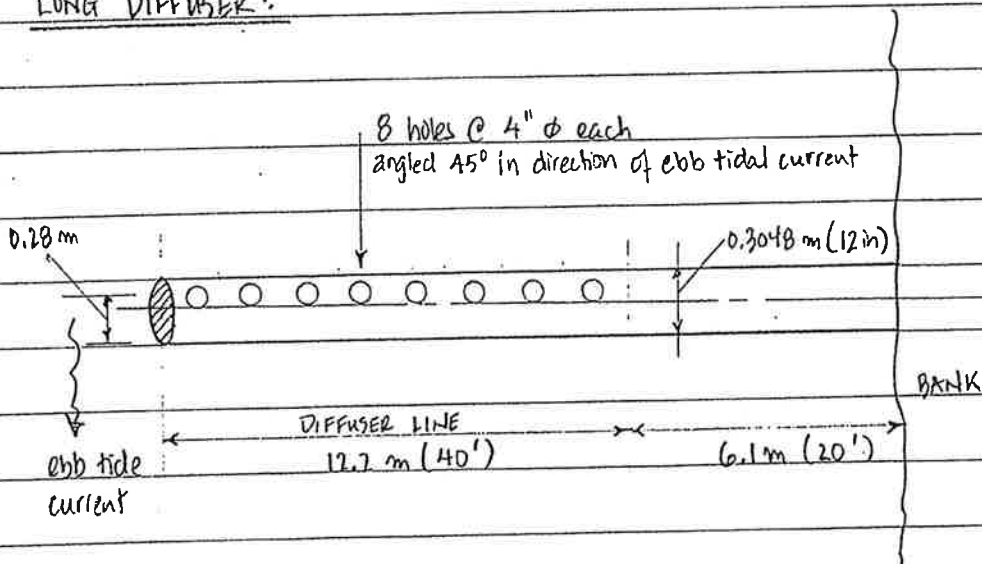
ZAPATA CORMIX DIFFUSER ANALYSIS - COCKREWS CREEK

9.16.98

SHORT DIFFUSER:



LONG DIFFUSER:



ZARATA COHIX DIFFUSER ANALYSIS

9-11698

DISCHARGE DATA

| | SHORT | LONG |
|--------------------------------|-----------------|--------------------|
| LENGTH OF DIFFUSER LINE: | 6.1 m | 12.2 m |
| BANK DIRECTION: | LEFT | LEFT |
| DISTANCE TO FIRST NOZZLE: | 4.6 m | 6.1 m |
| DISTANCE TO LAST NOZZLE: | 10.7 m | 18.3 m |
| ALIGNMENT ANGLE: | 90 | 90 |
| NUMBER OF OPENINGS: | 13 | 8 |
| SINGLE PORTS: | YES (A) | YES (A) |
| DIAMETER OF PORTS: | 0.1 m | 0.1 m |
| CONTRACTION COEFFICIENT: | 1.0 | 1.0 |
| HEIGHT OF PORT CENTERS: | 0.3048 m | 0.28 m |
| UNIDIRECTIONAL OR ALTERNATING: | ALTERNATING (B) | UNIDIRECTIONAL (A) |
| AVERAGE VERTICAL ANGLE: | — | 90 45 |
| RELATIVE ORIENTATION ANGLE: | — | 90 |
| SAME DIRECTION OR FANNED OUT: | SAME (A) | SAME (A) |
| HORIZONTAL ANGLE OF DISCHARGE: | — | 0 |
| DIFFUSER FLOW RATE: | 0.0131 m/s | 0.0131 m/s |
| FRESHWATER EFFLUENT: | YES | YES |
| TEMPERATURE: | 27.7°C | 27.7°C |
| HEATED DISCHARGE: | NO | NO |
| UNITS: | PPM | PPM |
| CONCENTRATION: | 1000 | 1000 |
| CONSERVATIVE SUBSTANCE: | YES | YES |

ZAPATA CORNIX DIFFUSER ANALYSIS

9.16.98

MIXING ZONE SPECIFICATION

| | |
|-------------------------------------|---------|
| EFFLUENT TOXIC BY USEPA STANDARDS: | NO |
| AMBIENT WATER QUALITY STANDARD: | NO |
| RME SPECIFICATION: | NO |
| MAX DISTANCE OF REGION OF INTEREST: | 6,000 m |
| NUMBER OF OUTPUT DISPLAY STEPS: | 10 |

p. 73¹ 6/24

ZAPATA CORNIX DIFFUSER ANALYSIS

9.16.98

SUMMARY OF RESULTS

① SHORT DIFFUSER

| <u>FILE</u> | <u>AMBIENT SLENARIO</u> | <u>S'</u> |
|-------------|-------------------------|-----------|
| ZAPATA1 | AFTER-SLACK | 97.3 |
| ZAPATA2 | SLACK | 5.8 |
| ZAPATA3 | BEFORE-SLACK | 105.6 |

$$\text{CONSERVATIVE AVERAGE} = (97.3 + 5.8) / 2 = 51.6 \quad \text{SAY } 50:1$$

② LONG DIFFUSER

| | | |
|---------|--------------|-------|
| ZAPATA4 | AFTER-SLACK | 197.9 |
| ZAPATA5 | SLACK | 5.1 |
| ZAPATA6 | BEFORE-SLACK | 210.8 |

$$\text{CONSERVATIVE AVERAGE} = (197.9 + 5.1) / 2 = 101.5 \quad \text{SAY } 100:1$$


```

C0      = .1000E+04  CUNITS=  PPB
NTOX    =  0
NSTD    =  0
REGMZ   =  0
XINT    =  6000.00  XMAX   =  6000.00

```

X-Y-Z COORDINATE SYSTEM:

ORIGIN is located at the bottom and the diffuser mid-point:
7.65 m from the LEFT bank/shore.

X-axis points downstream, Y-axis points to left, Z-axis points upward.

NSTEP = 10 display intervals per module

----- BEGIN MOD201: DIFFUSER DISCHARGE MODULE

Due to complex near-field motions: EQUIVALENT SLOT DIFFUSER (2-D) GEOMETRY

Profile definitions:

BV = Gaussian 1/e (37%) half-width, in vertical plane normal to trajectory
BH = top-hat half-width, in horizontal plane normal to trajectory
S = hydrodynamic centerline dilution
C = centerline concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|-----|-----|-----|-----|----------|-----|------|
| .00 | .00 | .30 | 1.0 | .100E+04 | .01 | 3.05 |

END OF MOD201: DIFFUSER DISCHARGE MODULE -----

----- BEGIN MOD277: UNSTABLE NEAR-FIELD ZONE OF ALTERNATING PERPENDICULAR DIFFUSER

Because of the strong ambient current the diffuser plume of this crossflowing discharge gets RAPIDLY DEFLECTED.

A near-field zone is formed that is VERTICALLY FULLY MIXED over the entire layer depth. Full mixing is achieved at a downstream distance of about five (5) layer depths.

Profile definitions:

BV = layer depth (vertically mixed)
BH = top-hat half-width, measured horizontally in y-direction
S = hydrodynamic average (bulk) dilution
C = average (bulk) concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|------|-----|-----|------|----------|------|------|
| .00 | .00 | .30 | 1.0 | .100E+04 | .01 | 3.05 |
| .76 | .00 | .35 | 34.2 | .292E+02 | .16 | 3.05 |
| 1.52 | .00 | .40 | 47.5 | .210E+02 | .32 | 3.06 |
| 2.29 | .00 | .44 | 57.4 | .174E+02 | .47 | 3.06 |
| 3.05 | .00 | .49 | 65.4 | .153E+02 | .62 | 3.06 |
| 3.81 | .00 | .53 | 72.3 | .138E+02 | .77 | 3.06 |
| 4.57 | .00 | .58 | 78.3 | .128E+02 | .92 | 3.07 |
| 5.33 | .00 | .62 | 83.7 | .119E+02 | 1.07 | 3.07 |
| 6.10 | .00 | .67 | 88.6 | .113E+02 | 1.22 | 3.07 |
| 6.86 | .00 | .72 | 93.1 | .107E+02 | 1.37 | 3.08 |
| 7.62 | .00 | .76 | 97.3 | .103E+02 | 1.52 | 3.08 |

Cumulative travel time = 101. sec

END OF MOD277: UNSTABLE NEAR-FIELD ZONE OF ALTERNATING PERPENDICULAR DIFFUSER -----

** End of NEAR-FIELD REGION (NFR) **

[illegible]

CO = .1000E+04 CONITS= PPB
 NTOX = 0
 NSTD = 0
 REGMZ = 0
 XINT = 6000.00 XMAX = 6000.00

X-Y-Z COORDINATE SYSTEM:

ORIGIN is located at the bottom and the diffuser mid-point:
 7.65 m from the LEFT bank/shore.

X-axis points downstream, Y-axis points to left, Z-axis points upward.
 NSTEP = 10 display intervals per module

BEGIN MOD101: DISCHARGE MODULE (SINGLE PORT AT DIFFUSER CENTER)

Initial conditions for individual jet/plume:

Average spacing between jet/plumes: .51 m

| X | Y | Z | S | C | BV | BH |
|-----|-----|-----|-----|----------|-----|-----|
| .00 | .00 | .30 | 1.0 | .100E+04 | .05 | .05 |

END OF MOD101: DISCHARGE MODULE (SINGLE PORT AT DIFFUSER CENTER)

BEGIN CORJET (MOD110): JET/PLUME NEAR-FIELD MIXING REGION

Jet/plume transition motion in weak crossflow.

| Zone of flow establishment: | | | | THETA E= | | 90.00 | | SIGMA E= | | .00 | |
|-----------------------------|---|-----|----|----------|-----|-------|---|----------|----|-----|-----|
| LE | = | .00 | XE | = | .00 | YE | = | .00 | ZE | = | .30 |

Profile definitions:

BV = Gaussian 1/e (37%) half-width, in vertical plane normal to trajectory

BH = before merging: Gaussian 1/e (37%) half-width in horizontal plane
normal to trajectory

after merging: top-hat half-width in horizontal plane
parallel to diffuser line

S = hydrodynamic centerline dilution

C = centerline concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|---------------------------------------|-----|------|-----|----------|-----|-----|
| Individual jet/plumes before merging: | | | | | | |
| .00 | .00 | .30 | 1.0 | .100E+04 | .05 | .05 |
| .00 | .00 | .41 | 1.1 | .877E+03 | .06 | .06 |
| .00 | .00 | .52 | 1.5 | .669E+03 | .07 | .07 |
| .00 | .00 | .62 | 1.9 | .526E+03 | .08 | .08 |
| .00 | .00 | .73 | 2.3 | .426E+03 | .09 | .09 |
| .00 | .00 | .84 | 2.8 | .353E+03 | .10 | .10 |
| .00 | .00 | .94 | 3.4 | .298E+03 | .11 | .11 |
| .00 | .00 | 1.05 | 3.9 | .255E+03 | .12 | .12 |
| .00 | .00 | 1.16 | 4.5 | .222E+03 | .13 | .13 |
| .00 | .00 | 1.27 | 5.1 | .195E+03 | .14 | .14 |
| .00 | .00 | 1.37 | 5.8 | .173E+03 | .15 | .15 |

Cumulative travel time = 7. sec

Merging of individual jet/plumes not found in this module, but interaction
 will occur in following module. Overall jet/plume interaction dimensions:

| | | | | | | |
|-----|-----|------|-----|----------|-----|------|
| .00 | .00 | 1.37 | 5.8 | .173E+03 | .15 | 3.10 |
|-----|-----|------|-----|----------|-----|------|

END OF CORJET (MOD110): JET/PLUME NEAR-FIELD MIXING REGION

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[illegible]

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Subsystem CORMIX2: Submerged Multiport Diffuser Discharges CORMIX v.3.20 Subsystem-version: September 1996

```
Site name/label:      ZAPATA^VA0003867
Design case:          BEFORE^SLACK^SHORT^DIFFUSER
FILE NAME:            cormix\sim\ZAPATA3 .cx2
Time of Fortran run:  09/16/98--16:10:17
```

```

Bounded section
BS      =      503.00  AS      =      766.57  QA      =      114.99  ICHREG= 1
HA      =      1.52   HD      =      1.52
Tidal Simulation at TIME =      -1.000 h
PERIOD=      12.40 h UAmix =      .300 dUa/dt=      .150 (m/s)/h
UA      =      .150 F      =      .334 USTAR = .3065E-01
UW      =      2.000 UWSTAR= .2198E-02
Uniform density environment
STRCND=  U      RHOAM =  999.7000

```

```

Diffuser type:          DITYPE= alternating perpendicular
BANK   =   LEFT        DISTB =          7.65   YB1   =          4.60   YB2   =          10.70
LD     =          6.10  NOPEN =          13      SPAC  =          .51
D0     =          .100  A0    =          .008  H0     =          .30
Nozzle/port arrangement: alternating without fanning
GAMMA  =          90.00  THETA =          90.00  SIGMA =          .00   BETA  =          90.00
U0     =          .128  Q0    =          .013          = .1310E-01
RHO0   =    996.3187  DRHO0 = .3381E+01  GP0    = .3317E-01
C0     = .1000E+04  CUNITS=  PPB
IPOLL  =    1        KS     = .0000E+00  KD      = .0000E+00

```

```

q0      = .2148E-02  m0      = .2755E-03  j0      = .7123E-04  SIGNJ0=      1.0
Associated 2-d length scales (meters)
lQ=B    =      .017  lM      =      .16    lm      =      .01
lmp     = 99999.00  lbp     = 99999.00  la      = 99999.00

```

| | | | | | | | |
|---------------------------------------|-------------|----|-------------|-----|-------------|------|------------|
| Q0 | = .1310E-01 | M0 | = .1681E-02 | J0 | = .4345E-03 | | |
| Associated 3-d length scales (meters) | | | | | | | |
| LQ | = .32 | LM | = .40 | Lm | = .27 | Lb | = .13 |
| | | | | Lmp | = 99999.00 | Lbp | = 99999.00 |
| Tidal: | | Tu | = .0797 h | Lu | = 3.432 | Lmin | = .137 |

FR0 = 5.44 FRD0 = 2.22 R = .85
(slot) (port/nozzle)

[illegible]

MIXING ZONE / TOXIC DILUTION / REGION OF INTEREST PARAMETERS

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```
C0      = .1000E+04  CUNITS=  PPB
NTOX    =  0
NSTD    =  0
REGMZ   =  0
XINT    =  6000.00  XMAX   =  6000.00
```

X-Y-Z COORDINATE SYSTEM:

ORIGIN is located at the bottom and the diffuser mid-point:
7.65 m from the LEFT bank/shore.

X-axis points downstream, Y-axis points to left, Z-axis points upward.

NSTEP = 10 display intervals per module

BEGIN MOD201: DIFFUSER DISCHARGE MODULE

Due to complex near-field motions: EQUIVALENT SLOT DIFFUSER (2-D) GEOMETRY

Profile definitions:

BV = Gaussian 1/e (37%) half-width, in vertical plane normal to trajectory

BH = top-hat half-width, in horizontal plane normal to trajectory

S = hydrodynamic centerline dilution

C = centerline concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|-----|-----|-----|-----|----------|-----|------|
| .00 | .00 | .30 | 1.0 | .100E+04 | .01 | 3.05 |

END OF MOD201: DIFFUSER DISCHARGE MODULE

BEGIN MOD277: UNSTABLE NEAR-FIELD ZONE OF ALTERNATING PERPENDICULAR DIFFUSER

Because of the strong ambient current the diffuser plume of this crossflowing discharge gets RAPIDLY DEFLECTED.

A near-field zone is formed that is VERTICALLY FULLY MIXED over the entire layer depth. Full mixing is achieved at a downstream distance of about five (5) layer depths.

Profile definitions:

BV = layer depth (vertically mixed)

BH = top-hat half-width, measured horizontally in y-direction

S = hydrodynamic average (bulk) dilution

C = average (bulk) concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|------|-----|-----|-------|----------|------|------|
| .00 | .00 | .30 | 1.0 | .100E+04 | .01 | 3.05 |
| .76 | .00 | .35 | 34.6 | .289E+02 | .16 | 3.05 |
| 1.52 | .00 | .40 | 48.4 | .207E+02 | .32 | 3.06 |
| 2.29 | .00 | .44 | 58.9 | .170E+02 | .47 | 3.06 |
| 3.05 | .00 | .49 | 67.8 | .148E+02 | .62 | 3.06 |
| 3.81 | .00 | .53 | 75.5 | .132E+02 | .77 | 3.06 |
| 4.57 | .00 | .58 | 82.5 | .121E+02 | .92 | 3.07 |
| 5.33 | .00 | .62 | 88.9 | .112E+02 | 1.07 | 3.07 |
| 6.10 | .00 | .67 | 94.8 | .105E+02 | 1.22 | 3.07 |
| 6.86 | .00 | .72 | 100.4 | .996E+01 | 1.37 | 3.08 |
| 7.62 | .00 | .76 | 105.6 | .947E+01 | 1.52 | 3.08 |

Cumulative travel time = 101. sec

END OF MOD277: UNSTABLE NEAR-FIELD ZONE OF ALTERNATING PERPENDICULAR DIFFUSER

** End of NEAR-FIELD REGION (NFR) **

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CO = .1000E+04 CUNITS= PPB
NTOX = 0
NSTD = 0
REGMZ = 0
XINT = 6000.00 XMAX = 6000.00

X-Y-Z COORDINATE SYSTEM:

ORIGIN is located at the bottom and the diffuser mid-point:
12.20 m from the LEFT bank/shore.

X-axis points downstream, Y-axis points to left, Z-axis points upward.
NSTEP = 10 display intervals per module

BEGIN MOD201: DIFFUSER DISCHARGE MODULE

Due to complex near-field motions: EQUIVALENT SLOT DIFFUSER (2-D) GEOMETRY

Profile definitions:

BV = Gaussian 1/e (37%) half-width, in vertical plane normal to trajectory
BH = top-hat half-width, in horizontal plane normal to trajectory
S = hydrodynamic centerline dilution
C = centerline concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|-----|-----|-----|-----|----------|-----|------|
| .00 | .00 | .28 | 1.0 | .100E+04 | .00 | 6.10 |

END OF MOD201: DIFFUSER DISCHARGE MODULE

BEGIN MOD271: ACCELERATION ZONE OF UNIDIRECTIONAL CO-FLOWING DIFFUSER

In this laterally contracting zone the diffuser plume becomes VERTICALLY FULLY MIXED over the entire layer depth (HS = 1.52m).

Full mixing is achieved after a plume distance of about five layer depths from the diffuser.

Profile definitions:

BV = layer depth (vertically mixed)
BH = top-hat half-width, in horizontal plane normal to trajectory
S = hydrodynamic average (bulk) dilution
C = average (bulk) concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|------|-----|-----|-------|----------|------|------|
| .00 | .00 | .28 | 1.0 | .100E+04 | .00 | 6.10 |
| .61 | .00 | .33 | 67.6 | .148E+02 | .15 | 6.09 |
| 1.22 | .00 | .38 | 94.5 | .106E+02 | .30 | 6.09 |
| 1.83 | .00 | .42 | 114.6 | .873E+01 | .46 | 6.09 |
| 2.44 | .00 | .47 | 131.1 | .763E+01 | .61 | 6.09 |
| 3.05 | .00 | .52 | 145.3 | .688E+01 | .76 | 6.08 |
| 3.66 | .00 | .57 | 157.9 | .633E+01 | .91 | 6.08 |
| 4.27 | .00 | .62 | 169.3 | .591E+01 | 1.07 | 6.08 |
| 4.88 | .00 | .67 | 179.6 | .557E+01 | 1.22 | 6.08 |
| 5.49 | .00 | .71 | 189.1 | .529E+01 | 1.37 | 6.08 |
| 6.10 | .00 | .76 | 197.9 | .505E+01 | 1.52 | 6.08 |

Cumulative travel time = 40. sec

END OF MOD271: ACCELERATION ZONE OF UNIDIRECTIONAL CO-FLOWING DIFFUSER

BEGIN MOD251: DIFFUSER PLUME IN CO-FLOW

C0 = .1000E+04 CUNITS= PPB
 NTOX = 0
 NSTD = 0
 REGMZ = 0
 XINT = 6000.00 XMAX = 6000.00

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 Omega Fact
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X-Y-Z COORDINATE SYSTEM:

ORIGIN is located at the bottom and the diffuser mid-point:
 12.20 m from the LEFT bank/shore.

X-axis points downstream, Y-axis points to left, Z-axis points upward.
 NSTEP = 10 display intervals per module

BEGIN MOD101: DISCHARGE MODULE (SINGLE PORT AT DIFFUSER CENTER)

| X | Y | Z | S | C | BV | BH |
|-----|-----|-----|-----|----------|-----|-----|
| .00 | .00 | .28 | 1.0 | .100E+04 | .05 | .05 |

END OF MOD101: DISCHARGE MODULE (SINGLE PORT AT DIFFUSER CENTER)

BEGIN CORJET (MOD110): JET/PLUME NEAR-FIELD MIXING REGION

Jet/plume transition motion in weak crossflow.

| Zone of flow establishment: | | | | THETA E= | | SIGMA E= | |
|-----------------------------|---|-----|----|----------|-----|----------|---|
| LE | = | .00 | XE | = | .00 | ZE | = |
| | | | | | | | |

Profile definitions:

BV = Gaussian 1/e (37%) half-width, in vertical plane normal to trajectory
 BH = before merging: Gaussian 1/e (37%) half-width in horizontal plane
 normal to trajectory
 after merging: top-hat half-width in horizontal plane
 parallel to diffuser line
 S = hydrodynamic centerline dilution
 C = centerline concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|---------------------------------------|-----|------|-----|----------|-----|-----|
| Individual jet/plumes before merging: | | | | | | |
| .00 | .00 | .28 | 1.0 | .100E+04 | .05 | .05 |
| .08 | .00 | .37 | 1.1 | .900E+03 | .06 | .06 |
| .15 | .00 | .46 | 1.4 | .703E+03 | .08 | .08 |
| .21 | .00 | .57 | 1.8 | .566E+03 | .09 | .09 |
| .26 | .00 | .67 | 2.2 | .465E+03 | .10 | .10 |
| .31 | .00 | .78 | 2.6 | .390E+03 | .11 | .11 |
| .35 | .00 | .89 | 3.0 | .331E+03 | .12 | .12 |
| .39 | .00 | 1.01 | 3.5 | .286E+03 | .14 | .14 |
| .42 | .00 | 1.12 | 4.0 | .249E+03 | .15 | .15 |
| .45 | .00 | 1.24 | 4.6 | .220E+03 | .16 | .16 |
| .48 | .00 | 1.35 | 5.1 | .195E+03 | .17 | .17 |

Cumulative travel time = 6. sec

Merging of individual jet/plumes not found in this module, but interaction
 will occur in following module. Overall jet/plume interaction dimensions:

| | | | | | | |
|-----|-----|------|-----|----------|-----|------|
| .48 | .00 | 1.35 | 5.1 | .195E+03 | .17 | 6.15 |
|-----|-----|------|-----|----------|-----|------|

END OF CORJET (MOD110): JET/PLUME NEAR-FIELD MIXING REGION

BEGIN MOD232: LAYER BOUNDARY IMPINGEMENT/UPSTREAM SPREADING

| | | |
|--|---|-----------|
| Vertical angle of layer/boundary impingement | = | 77.35 deg |
| Horizontal angle of layer/boundary impingement | = | .00 deg |

STEADY-STATE MIXING CONDITION IS NOT POSSIBLE in this zone,
even though some ADDITIONAL DILUTION MAY OCCUR!

Also, all far-field processes will be UNSTEADY.

Also, all particle processes will be disabled. SIMULATION STOPS because of stagnant ambient conditions.

END OF MOD232: LAYER BOUNDARY IMPINGEMENT/UPSTREAM SPREADING

```

** End of NEAR-FIELD REGION (NFR) **

```

SIMULATION STOPS because of STAGNANT AMBIENT conditions.

IMULATION STOPS BECAUSE OF DISCRETE-TIME LIMITATION.
All far-field processes will be UNSTEADY.

[illegible]

CO = .1000E+04 CUNITS= PPB
 NTOX = 0
 NSTD = 0
 REGMZ = 0
 XINT = 6000.00 XMAX = 6000.00

X-Y-Z COORDINATE SYSTEM:

ORIGIN is located at the bottom and the diffuser mid-point:
 12.20 m from the LEFT bank/shore.

X-axis points downstream, Y-axis points to left, Z-axis points upward.

NSTEP = 10 display intervals per module

BEGIN MOD201: DIFFUSER DISCHARGE MODULE

Due to complex near-field motions: EQUIVALENT SLOT DIFFUSER (2-D) GEOMETRY

Profile definitions:

BV = Gaussian 1/e (37%) half-width, in vertical plane normal to trajectory
 BH = top-hat half-width, in horizontal plane normal to trajectory
 S = hydrodynamic centerline dilution
 C = centerline concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|-----|-----|-----|-----|----------|-----|------|
| .00 | .00 | .28 | 1.0 | .100E+04 | .00 | 6.10 |

END OF MOD201: DIFFUSER DISCHARGE MODULE

BEGIN MOD271: ACCELERATION ZONE OF UNIDIRECTIONAL CO-FLOWING DIFFUSER

In this laterally contracting zone the diffuser plume becomes VERTICALLY FULLY MIXED over the entire layer depth (HS = 1.52m).

Full mixing is achieved after a plume distance of about five layer depths from the diffuser.

Profile definitions:

BV = layer depth (vertically mixed)
 BH = top-hat half-width, in horizontal plane normal to trajectory
 S = hydrodynamic average (bulk) dilution
 C = average (bulk) concentration (includes reaction effects, if any)

| X | Y | Z | S | C | BV | BH |
|------|-----|-----|-------|----------|------|------|
| .00 | .00 | .28 | 1.0 | .100E+04 | .00 | 6.10 |
| .61 | .00 | .33 | 68.1 | .147E+02 | .15 | 6.09 |
| 1.22 | .00 | .38 | 95.8 | .104E+02 | .30 | 6.09 |
| 1.83 | .00 | .42 | 116.9 | .855E+01 | .46 | 6.09 |
| 2.44 | .00 | .47 | 134.7 | .742E+01 | .61 | 6.09 |
| 3.05 | .00 | .52 | 150.3 | .665E+01 | .76 | 6.08 |
| 3.66 | .00 | .57 | 164.3 | .609E+01 | .91 | 6.08 |
| 4.27 | .00 | .62 | 177.2 | .564E+01 | 1.07 | 6.08 |
| 4.88 | .00 | .67 | 189.1 | .529E+01 | 1.22 | 6.08 |
| 5.49 | .00 | .71 | 200.3 | .499E+01 | 1.37 | 6.08 |
| 6.10 | .00 | .76 | 210.8 | .474E+01 | 1.52 | 6.08 |

Cumulative travel time = 40. sec

END OF MOD271: ACCELERATION ZONE OF UNIDIRECTIONAL CO-FLOWING DIFFUSER

BEGIN MOD251: DIFFUSER PLUME IN CO-FLOW

Phase 1: Vertically mixed, Phase 2: Re-stratified

Phase 2: The flow has RESTRATIFIED at the beginning of this zone.

This flow region is INSIGNIFICANT in spatial extent and will be by-passed.

END OF MOD251: DIFFUSER PLUME IN CO-FLOW

** End of NEAR-FIELD REGION (NFR) **

BEGIN MOD241: BUOYANT AMBIENT SPREADING

Discharge is non-buoyant or weakly buoyant.
Therefore BUOYANT SPREADING REGIME is ABSENT.

END OF MOD241: BUOYANT AMBIENT SPREADING

BEGIN MOD261: PASSIVE AMBIENT MIXING IN UNIFORM AMBIENT

```
Vertical diffusivity (initial value) = .935E-02 m^2/s
Horizontal diffusivity (initial value) = .117E-01 m^2/s
```

The passive diffusion plume is VERTICALLY FULLY MIXED at beginning of region.

Profile definitions:

profile definitions:
 BV = Gaussian s.d.*sqrt(pi/2) (46%) thickness, measured vertically
 = or equal to layer depth, if fully mixed

BH = Gaussian s.d.*sqrt(pi/2) (46%) half-width,
measured horizontally in Y-direction

ZU = upper plume boundary (Z-coordinate)

ZU = upper plume boundary (Z-coordinate)
ZL = lower plume boundary (Z-coordinate)

S = hydrodynamic centerline dilution

C = centerline concentration (includes reaction effects, if any)

Plume Stage 1 (not bank attached):

| Plume Stage 1 (not bank attached): | | | | | | | | | |
|------------------------------------|-----|------|-----------|----------|------|------|------|----|-----|
| X | Y | Z | S | C | BV | BH | ZU | ZL | |
| 6.10 | .00 | 1.52 | 210.8 | .474E+01 | 1.52 | 6.12 | 1.52 | | .00 |
| 51.64 | .00 | 1.52 | 227.8 | .439E+01 | 1.52 | 6.97 | 1.52 | | .00 |
| 97.17 | .00 | 1.52 | 249.6 | .401E+01 | 1.52 | 7.73 | 1.52 | | .00 |
| 142.71 | .00 | 1.52 | 273.5 | .366E+01 | 1.52 | 8.42 | 1.52 | | .00 |
| 188.24 | .00 | 1.52 | 297.7 | .336E+01 | 1.52 | 9.05 | 1.52 | | .00 |
| 233.78 | .00 | 1.52 | 321.4 | .311E+01 | 1.52 | 9.65 | 1.52 | | .00 |
| 238.07 | .00 | 1.52 | 323.5 | .309E+01 | 1.52 | 9.70 | 1.52 | | .00 |
| Cumulative travel time = | | | 1587. sec | | | | | | |

CORMIX prediction has been TERMINATED at last prediction interval.
Limiting distance due to TIDAL REVERSAL has been reached.

END OF MOD261: PASSIVE AMBIENT MIXING IN UNIFORM AMBIENT

[illegible]

- ☐ Discretionary Addition
☐ Score change, but no status change
☐ Deletion

Sheet 1 of 2

Permit No.: 1A00003867

Facility Name:

MEGA PROTEIN

REEDVILLE

Receiving Water: COCKRELL'S CREEK

Permit Number:

Is this facility a steam electric power plant (SIC=4911) or one or more of the following characteristics?

Power output 500 MW or greater (not using a cooling pond/lake)

Nuclear power plant

Wastewater discharge greater than 25% of the receiving stream's 7Q10 flow rate.

ES score is 600 (stop here) ☒ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

☐ YES; score is 700 (stop here)

☒ NO (continue)

CTOR 1: Toxic Pollutant Potential

SIC Code:

Primary SIC Code: 2077

Other SIC Codes:

Industrial Subcategory Code: 000 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

| Toxicity Group | Code | Points | Toxicity Group | Code | Points | Toxicity Group | Code | Points |
|--------------------------|------|--------|-----------------------------|------|--------|------------------------------|------|--------|
| No process waste streams | 0 | 0 | <input type="checkbox"/> 3. | 3 | 15 | <input type="checkbox"/> 7. | 7 | 35 |
| 1. | 1 | 5 | <input type="checkbox"/> 4. | 4 | 20 | <input type="checkbox"/> 8. | 8 | 40 |
| 2. | 2 | 10 | <input type="checkbox"/> 5. | 5 | 25 | <input type="checkbox"/> 9. | 9 | 45 |
| | | | <input type="checkbox"/> 6. | 6 | 30 | <input type="checkbox"/> 10. | 10 | 50 |

Code Number Checked: 000

Total Points Factor 1: 0

CTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A—Wastewater Flow Only Considered

| Wastewater Type (See Instructions) | Code | Points |
|------------------------------------|--|--------|
| Category I: Flow < 5 MGD | <input type="checkbox"/> 11 | 0 |
| Flow 5 to 10 MGD | <input type="checkbox"/> 12 | 10 |
| Flow > 10 to 50 MGD | <input type="checkbox"/> 13 | 20 |
| Flow > 50 MGD | <input type="checkbox"/> 14 | 30 |
| Category II: Flow < 1 MGD | <input type="checkbox"/> 21 | 10 |
| Flow 1 to 5 MGD | <input type="checkbox"/> 22 | 20 |
| Flow > 5 to 10 MGD | <input type="checkbox"/> 23 | 30 |
| Flow > 10 MGD | <input type="checkbox"/> 24 | 50 |
| Category III: Flow < 1 MGD | <input type="checkbox"/> 31 | 0 |
| Flow 1 to 5 MGD | <input type="checkbox"/> 32 | 10 |
| Flow > 5 to 10 MGD | <input type="checkbox"/> 33 | 20 |
| Flow > 10 MGD | <input checked="" type="checkbox"/> 34 | 30 |

Section B—Wastewater and Stream Flow Considered

| Wastewater Type (See Instructions) | Percent of Instream Wastewater Concentration at Receiving Stream Low Flow | Code | Points |
|------------------------------------|---|-----------------------------|--------|
| TYPE I/III: | < 10% | <input type="checkbox"/> 41 | 0 |
| | ≥ 10% to < 50% | <input type="checkbox"/> 42 | 10 |
| | ≥ 50% | <input type="checkbox"/> 43 | 20 |
| Type II: | < 10% | <input type="checkbox"/> 51 | 0 |
| | ≥ 10% to < 50% | <input type="checkbox"/> 52 | 20 |
| | ≥ 50% | <input type="checkbox"/> 53 | 30 |

Code Checked from Section A or B: 34

Total Points Factor 2: 30

FACTOR 3: Conventional Pollutants
(only when limited by the permit)

NPDES N VIA 0101013867

p. 93

A. Oxygen Demanding Pollutant: (check one) ☒ BOD ☐ COD ☐ Other: _____

| Permit Limits: (check one) | | | Code | Points |
|-------------------------------------|-----------------------|--|------|--------|
| <input type="checkbox"/> | <100 lbs/day | | 1 | 0 |
| <input type="checkbox"/> | 100 to 1000 lbs/day | | 2 | 5 |
| <input checked="" type="checkbox"/> | >1000 to 3000 lbs/day | | 3 | 15 |
| <input type="checkbox"/> | >3000 lbs/day | | 4 | 20 |

Code Checked: 13

Points Scored: 15

B. Total Suspended Solids (TSS)

| Permit Limits: (check one) | | | Code | Points |
|-------------------------------------|-----------------------|--|------|--------|
| <input type="checkbox"/> | <100 lbs/day | | 1 | 0 |
| <input type="checkbox"/> | 100 to 1000 lbs/day | | 2 | 5 |
| <input checked="" type="checkbox"/> | >1000 to 5000 lbs/day | | 3 | 15 |
| <input type="checkbox"/> | >5000 lbs/day | | 4 | 20 |

Code Checked: 13

Points Scored: 15

C. Nitrogen Pollutant: (check one) ☒ Ammonia ☐ Other: _____

| Permit Limits: (check one) | | | Code | Points |
|-------------------------------------|-----------------------|--|------|--------|
| <input checked="" type="checkbox"/> | Nitrogen Equivalent | | | |
| <input type="checkbox"/> | <300 lbs/day | | 1 | 0 |
| <input type="checkbox"/> | 300 to 1000 lbs/day | | 2 | 5 |
| <input type="checkbox"/> | >1000 to 3000 lbs/day | | 3 | 15 |
| <input type="checkbox"/> | >3000 lbs/day | | 4 | 20 |

Code Checked: 13

Points Scored: 15

Total Points Factor 3: 30

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

☐ YES (If yes, check toxicity potential number below)

☒ NO (If no, go to Factor 5)

Determine the human health toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column — check one below)

| Toxicity Group | Code | Points | Toxicity Group | Code | Points | Toxicity Group | Code | Points |
|---|------|--------|-----------------------------|------|--------|------------------------------|------|--------|
| <input type="checkbox"/> No process waste streams | 0 | 0 | <input type="checkbox"/> 3. | 3 | 0 | <input type="checkbox"/> 7. | 7 | 15 |
| <input type="checkbox"/> 1. | 1 | 0 | <input type="checkbox"/> 4. | 4 | 0 | <input type="checkbox"/> 8. | 8 | 20 |
| <input type="checkbox"/> 2. | 2 | 0 | <input type="checkbox"/> 5. | 5 | 5 | <input type="checkbox"/> 9. | 9 | 25 |
| | | | <input type="checkbox"/> 6. | 6 | 10 | <input type="checkbox"/> 10. | 10 | 30 |

Code Number Checked: 10

Total Points Factor 4: 10

FACTOR 5: Water Quality Factors

NOTES No.: 11400038167 p. 94

- A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge?

| | | |
|---|--------|-----------|
| <input checked="" type="checkbox"/> Yes | Code 1 | Points 10 |
| <input type="checkbox"/> No | Code 2 | Points 0 |

- B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

| | | |
|--|--------|----------|
| <input type="checkbox"/> Yes | Code 1 | Points 0 |
| <input checked="" type="checkbox"/> No | Code 2 | Points 5 |

chronic std for ammonia

- C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

| | | |
|---|--------|-----------|
| <input checked="" type="checkbox"/> Yes | Code 1 | Points 10 |
| <input type="checkbox"/> No | Code 2 | Points 0 |

Omega is under TRE for O2.

Code Number Checked: A 1 B 2 C 1
Points Factor 5: A 10 + B 5 + C 10 = 25 TOTAL

FACTOR 6: Proximity to Near Coastal Waters

- A. Base Score: Enter flow code here (from Factor 2): 34

Enter the multiplication factor that corresponds to the flow code: 0.15

Check appropriate facility HPRI Code (from PCS):

| | HPRI # | Code | HPRI Score |
|-------------------------------------|--------|------|------------|
| <input type="checkbox"/> | 1 | 1 | 20 |
| <input type="checkbox"/> | 2 | 2 | 0 |
| <input checked="" type="checkbox"/> | 3 | 3 | 30 |
| <input type="checkbox"/> | 4 | 4 | 0 |
| <input type="checkbox"/> | 5 | 5 | 20 |

| Flow Code | Multiplication Factor |
|---------------|-----------------------|
| 11, 31, or 41 | 0.00 |
| 12, 32, or 42 | 0.05 |
| 13, 33, or 43 | 0.10 |
| 14 or 34 | 0.15 |
| 21 or 31 | 0.10 |
| 22 or 32 | 0.30 |
| 23 or 33 | 0.60 |
| 24 | 1.00 |

HPRI code checked: 3

Base Score: (HPRI Score) 30 x (Multiplication Factor) 0.15 = 4.5 (TOTAL POINTS)

- B. Additional Points — NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see Instructions) or the Chesapeake Bay?

| | | |
|---|--------|-----------|
| <input checked="" type="checkbox"/> Yes | Code 1 | Points 10 |
| <input type="checkbox"/> No | Code 2 | Points 0 |

- C. Additional Points — Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

| | | |
|--|--------|-----------|
| <input type="checkbox"/> Yes | Code 1 | Points 10 |
| <input checked="" type="checkbox"/> No | Code 2 | Points 0 |

Code Number Checked: A 3 B 1 C 2
Points Factor 6: A 45 + B 10 + C 10 = 65 TOTAL

SCORE SUMMARY

NPDES No.: V1410101031816171

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| Factor | Description | Total Points |
|-----------------------------|----------------------------------|--------------|
| 1 | Toxic Pollutant Potential | <u>5</u> |
| 2 | Flow/Streamflow Volume | <u>30</u> |
| 3 | Conventional Pollutants | <u>35</u> |
| 4 | Public Health Impacts | <u>0</u> |
| 5 | Water Quality Factors | <u>25</u> |
| 6 | Proximity to Near Coastal Waters | <u>14.5</u> |
| TOTAL (Factors 1 through 6) | | <u>109.5</u> |

51. Is the total score equal to or greater than 80? ☒ Yes (Facility is a major) ☐ No

52. If the answer to the above question is no, would you like this facility to be discretionary major?

☐ No

☐ Yes (Add 500 points to the above score and provide reason below:

Reason: _____

NEW SCORE: 109.5

OLD SCORE: 109.5

S. Mosca
Permit Reviewer's Name

(804) 435-3181
Phone Number

7-2-98
Date

To: James R. Bell@rchmd@deq
Cc:
Bcc:
From: Maynard D. Phillips@WPS@DEQ
Subject:
Date: Monday, May 4, 1998 8:55:36 EDT
Attach:
Certify: N
Forwarded by: James R. Bell@RCHMD@DEQ

Ormeau fact sheet
p. 96

Forwarded to: Denise M. Mosca@KLMCK@DEQ
cc: Ray R. Jenkins@RCHMD@DEQ
Forwarded date: Monday, May 4, 1998 9:25:57 EDT
Comments by: James R. Bell@RCHMD@DEQ

----- [Original Message] -----

JR

Relative to Zappata antibacksliding:

I believe that the current permit limits result in attainment of all applicable standards in the receiving stream. Further, I believe that the stream is a tier 1 stream. In this case section 302(d)(4)(B) of the clean water act allows modification of the permit limits and antibacksliding does not apply.

For example, the standards are attained, they will be attained after the modification, antidegradation for this stream consists of the finding that it is a tier 1 stream requiring maintenance of all standards. Bottom line is, the change will comply with 303(d)(4)(B) and in that case section 402(o) does not apply. See section 402(o)(1) of the act.

Dale.

the development of thermal water quality criteria for such protection and propagation in the identified waters or parts thereof.

(2) Each State shall submit to the Administrator from time to time, with the first such submission not later than one hundred and eighty days after the date of publication of the first identification of pollutants under section 304(a)(2)(D), for his approval the waters identified and the loads established under paragraphs (1)(A), (1)(B), (1)(C), and (1)(D) of this subsection. The Administrator or shall either approve or disapprove such identification and load not later than thirty days after the date of submission. If the Administrator approves such identification and load, such State shall incorporate them into its current plan under subsection (e) of this section. If the Administrator disapproves such identification and load, he shall not later than thirty days after the date of such disapproval identify such waters in such State and establish such loads for such waters as he determines necessary to implement the water quality standards applicable to such waters and upon such identification and establishment the State shall incorporate them into its current plan under subsection (e) of this section.

(3) For the specific purpose of developing information, each State shall identify all waters within its boundaries which it has not identified under paragraph (1)(A) and (1)(B) of this subsection and estimate for such waters the total maximum daily load with seasonal variations and margins of safety, for those pollutants which the Administrator identifies under section 304(a)(2) as suitable for such calculation and for thermal discharges, at a level that would assure protection and propagation of a balanced indigenous population of fish, shellfish and wildlife.

303(d) (4) LIMITATIONS ON REVISION OF CERTAIN EFFLUENT LIMITATIONS.—

(A) STANDARD NOT ATTAINED.—For waters identified under paragraph (1)(A) where the applicable water quality standard has not yet been attained, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section may be revised only if (i) the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard, or (ii) the designated use which is not being attained is removed in accordance with regulations established under this section.

(B) STANDARD ATTAINED.—For waters identified under paragraph (1)(A) where the quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section or any water quality standard established under this section or any other permitting standard may be revised only if such revision is subject to and consistent with the antidegradation policy established under this section.

(e)(1) Each State shall have a continuing planning process approved under paragraph (2) of this subsection which is consistent with this Act.

Monitoring station: 7-COC001.61

Data

| Date | Temp | pH | Salinity |
|----------|------|------|----------|
| 92/08/11 | 27.5 | 6.43 | |
| 92/09/10 | 26.4 | 7.56 | |
| 92/10/13 | 17.2 | 8.27 | |
| 92/10/27 | 14.4 | 8.58 | 18 |
| 92/11/12 | 13.7 | 8.08 | |
| 92/12/14 | 6.1 | 8.25 | 16 |
| 92/12/16 | 6 | 7.64 | |
| 93/01/11 | 5.3 | 7.51 | |
| 93/02/08 | 4.1 | 8.44 | |
| 93/02/17 | 6.3 | 8.63 | 14 |
| 93/03/23 | 8.1 | 8.19 | |
| 93/04/08 | 9.6 | 8.2 | 11 |
| 93/06/09 | 25.8 | 8.17 | 11 |
| 93/10/21 | 19.1 | 7.87 | 18 |
| 93/12/13 | 6 | 7.8 | |
| 94/02/16 | 2.7 | 8.19 | 13 |
| 94/04/06 | 12.4 | 8.48 | 10 |
| 94/06/07 | 23.1 | 8.08 | 10 |
| 94/08/09 | 24.6 | 8.1 | 14 |
| 94/12/15 | 7.7 | 8.08 | 17 |
| 95/02/09 | 0.8 | 8.85 | 16 |
| 95/06/12 | 26.7 | 7.83 | 17 |
| 95/08/11 | 28.5 | 8.24 | 19 |
| 95/09/13 | 25 | 8.05 | 22 |
| 95/12/11 | 4.1 | 7.8 | 21 |
| 96/03/08 | 7.7 | 7.57 | 14 |
| 96/06/20 | 29.5 | 8.65 | 12 |
| 96/09/19 | 23 | 7.63 | 13 |
| 96/12/12 | 6.6 | 7.75 | 12 |
| 97/03/10 | 9.7 | 8.29 | 10 |
| 97/06/05 | 20.6 | 7.66 | 13 |
| 97/07/28 | 28.5 | 7.72 | 15 |
| 97/09/16 | 26.3 | 7.82 | 17 |
| 97/11/17 | 10 | 8.05 | 19 |
| 98/01/13 | 7.8 | 8 | 20 |
| 98/03/11 | 8.3 | 8.38 | 13 |

Statistics

| | | | |
|---------|----------|----------|----|
| Count | 36 | 36 | 27 |
| Mean | 14.7 | 8.023333 | 15 |
| Std Dev | 9.300998 | 0.4357 | |

7-COC001.61

90th % Temp 26.62388

90th % pH 8.5819

Mean Salinity 15

15-1999

CRITERION FOR Cockrell's Creek at Omega Protein VA0003867

Units = ug/l unless noted as mg/l

| AMETER | CRITERIA | | | QL | WLAa | WLAc | WLAh |
|---|----------|---------|--------|------|----------|----------|---------|
| | Acute | Chronic | HH | | | | |
| -N,mg/l | 1.05 | 0.16 | | 0.2 | 2.104566 | 7.903412 | |
| monia Acute criteria is one hour average conc., Chronic criteria is 4-day average conc. | | | | | | | |
| naphthene | | | 2700 | 10 | | | 135000 |
| rin | 1.3 | .13 | .0014 | 0.05 | 2.6 | 6.5 | .07 |
| hracene | | | 110000 | 10 | | | 5500000 |
| imony | | | 4300 | 10 | | | 215000 |
| III | 69 | 36 | | 10 | 138 | 1800 | |
| izene | | | 710 | 10 | | | 35500 |
| izo(a)anthracene | | | .49 | 10 | | | 24.5 |
| izo(b)fluoranthene | | | .49 | 10 | | | 24.5 |
| izo(k)fluoranthene | | | .49 | 10 | | | 24.5 |
| izo(a)pyrene | | | .49 | 10 | | | 24.5 |
| moform | | | 3600 | 10 | | | 180000 |
| yl benzyl phthalate | | | 5200 | 10 | | | 260000 |
| mium | 43.00 | 9.30 | | 1 | 86 | 465 | |
| bon Tetrachloride | | | 45 | 10 | | | 2250 |
| ordane | 0.0900 | 0.0040 | 0.0059 | 0.2 | .18 | .2 | .295 |
| lorine Prod. Oxid | 13 | 7.5 | | 10 | NA | 375 | |
| lorodibromomethane | | | 57000 | 10 | | | 2850000 |
| loroform | | | 4700 | 10 | | | 235000 |
| chlorophenol | | | 400 | 20 | | | 20000 |
| lorpyrifos | .011 | .0056 | | 0.2 | .022 | .28 | |
| III | | | | 10 | | | |
| VI | 1100 | 50 | | 10 | 2200 | 2500 | |
| ysene | | | .49 | 10 | | | 24.5 |

These criteria
 were calculated
 using STORET
 data from
 7 - C0C001.61
 from 8/11/92 - 3/11/98
 using the DEQ
 WAS program.
 The WAS program
 was updated 12/98
 by TKO to reflect
 change in the
 water quality
 standards
 effective 12/97.

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| AMETER | CRITERIA | | | QL | WLAa | WLAc | WLAh |
|-----------------------|----------|---------|--------|-----|--------------|------|-----------|
| | Acute | Chronic | HH | | | | |
| per | 5.900 | 3.800 | | 10 | 11.8 | 190 | |
| nide | 1 | 1 | 215000 | 10 | 2 | 50 | 1.075E+07 |
| | | | .0084 | 0.1 | | | .42 |
| | | | .0059 | 0.1 | | | .295 |
| | .13 | .001 | .0059 | 0.1 | .26 | .05 | .295 |
| | | .1 | | | | 5 | |
| eton | | | | | | | |
| enz(a,h)anthracene | | | .49 | 20 | | | 24.5 |
| utyl phthalate | | | 12000 | 10 | | | 600000 |
| hloromethane | | | 16000 | 20 | | | 800000 |
| -Dichlorobenzene | | | 17000 | 10 | | | 850000 |
| -Dichlorobenzene | | | 2600 | 10 | | | 130000 |
| -Dichlorobenzene | | | 2600 | 10 | | | 130000 |
| hlorobromomethane | | | 460 | 10 | | | 23000 |
| -Dichloroethane | | | 990 | 10 | | | 49500 |
| , Dichloroethylene | | | 17000 | 10 | | | 850000 |
| , Dichlorophenol | | | 790 | 10 | | | 39500 |
| ldrin | .71 | .0019 | .0014 | 0.1 | 1.42 | .095 | .07 |
| thyl phthalate | | | 120000 | 10 | | | 6000000 |
| 2-EthylhexylPhthalate | | | 59 | 10 | | | 2950 |
| , Dimethylphenol | | | 2300 | 10 | | | 115000 |
| -Dinitrotoluene | | | 91 | 10 | | | 4550 |
| losulfan* | .034 | .0087 | 240 | 0.1 | 6.800001E-02 | .435 | 12000 |
| rin | .037 | .0023 | .81 | 0.1 | .074 | .115 | 40.5 |
| ylbenzene | | | 29000 | 10 | | | 1450000 |
| oranthene | | | 370 | 10 | | | 18500 |
| orene | | | 14000 | 10 | | | 700000 |

901-2

| PARAMETER | CRITERIA | | | QL | WLAa | WLAc | WLAh |
|-----------------------------------|----------|---------|--------------|------|------|------|----------|
| | Acute | Chronic | HH | | | | |
| thion | | .01 | | | | .5 | |
| ptachlor | .053 | .0036 | .0021 | 0.05 | .106 | .18 | .105 |
| xachlorocyclohexane | .16 | .01 | 25 | 0.05 | .32 | .5 | 1250 |
| drogen Sulfide | | 2 | | | | 100 | |
| deno(1,2,3cd)pyrene | | | .49 | 20 | | | 24.5 |
| ophorone | | | 490000 | 10 | | | 2.45E+07 |
| pone | | 0 | | | | 0 | |
| ad | 240.000 | 9.300 | | 5 | 480 | 465 | |
| lathion | | .1 | | | | 5 | |
| rcury | 2.1 | .025 | .053 | 0.2 | 4.2 | 1.25 | 2.65 |
| thoxyclor | | .03 | | 0.2 | | 1.5 | |
| rex | | 0 | | | | 0 | |
| nchlorobenzene | | | 21000 | 50 | | | 1050000 |
| ckel | 75.000 | 8.300 | 4600 | 40 | 150 | 415 | 230000 |
| trobenzene | | | 1900 | 10 | | | 95000 |
| B (check isomer**) | | .03 | .00045 | 1 | | 1.5 | .0225 |
| ntachlorophenol | 13.000 | 7.900 | 82 | 50 | 26 | 395 | 4100 |
| enol | | | 4600000 | 10 | | | 2.3E+08 |
| osphorus (el.) | | .1 | | | | 5 | |
| rene | | | 11000 | 10 | | | 550000 |
| adionuclides: | | | | | | | |
| Gross Alpha Particle | | | 15 pCi/l | | | | |
| Beta Particle and Photon Activity | | | 4 mrem | | | | |
| Strontium-90 | | | 8 pCi/l | | | | |
| Tritium | | | 20,000 pCi/l | | | | |

Paid

| AMETER | CRITERIA | | | QL | WLAa | WLAc | WLAh |
|----------------------|----------|---------|--------|----|------|------|--------|
| | Acute | Chronic | HH | | | | |
| enium | 300 | 71 | 11000 | 5 | 600 | 3550 | 550000 |
| ver | 2.300 | | | 2 | 4.6 | | |
| rachloroethylene | | | 3500 | 10 | | | 175000 |
| uene | | | 200000 | 10 | | | 1E+07 |
| aphene | .21 | .0002 | .0075 | 5 | .42 | .01 | .375 |
| ,4, Trichlorobenzene | | | 950 | 10 | | | 47500 |
| chlorethylene | | | 810 | 10 | | | 40500 |
| ,6-Trichlorophenol | | | 65 | 10 | | | 3250 |
| butyltin | .36 | .001 | | | NA | .05 | |
| yl Chloride | | | 5300 | 10 | | | 265000 |
| c | 95.000 | 86.000 | | 20 | 190 | 4300 | |

terion also applicable for D.O., pH, Temp. and Dioxin

metals shall be measured as dissolved. For Cadmium, Chromium III, Copper, Lead, Nickel, Silver Zinc, multiply number by water effect ratio (WER), as defined in 9 VAC 25-260-140.F.

onic aquatic life criteria applies to methyl mercury. This criteria will protect the marketability natural resources, e.g. fish and shellfish.

ndosulfan I-0.014, Endosulfan II-0.004, Endosulfan Sulfate-0.066

PCB 1242, 1254, 1221, 1232, 1248, 1260 or 1016 (only 1242 has a detection level)

background data are available correct the WLA by subtracting the product of background concentration and the appropriate factor (Q7/QE, Q1/QE, Q30/QE, QH/QE, 0, 1 or 49)

receiving waters are transitional, run fresh and salt and use most stringent

OUT INFORMATION:

PWS = n Lake, marsh or swamp = n
90th percentile Temperature = 26.62
Salinity= 15

Receiving stream is Cockrell's Creek - salt water
Contaminated stormwater = n
90th percentile pH = 8.58

P.108

Analysis of the Omega 001 effluent data for ammonia
Averaging period for standard = 30 days

p. 103

The statistics for ammonia are:

| | | |
|-------------------------|---|-----------|
| Number of values | = | 17 |
| Quantification level | = | .2 |
| Number < quantification | = | 0 |
| Expected value | = | 15.55723 |
| Variance | = | 160.7506 |
| C.V. | = | .8149742 |
| 97th percentile | = | 46.16788 |
| Statistics used | = | lognormal |

The WLAs for ammonia are:

| | | |
|------------------|---|------|
| Acute WLA | = | 2.1 |
| Chronic WLA | = | 7.9 |
| Human Health WLA | = | ---- |

Limits are based on acute toxicity and 2 samples/month, 1 samples/week

| | | |
|-----------------------|---|---------|
| Maximum daily limit | = | 2.1 |
| Average weekly limit | = | 2.1 |
| Average monthly limit | = | 1.67877 |

Note: The maximum daily limit applies to industrial dischargers
The average weekly limit applies to POTWs
The average monthly limit applies to both.

The Data are

3.92
12.6
20.2
15.8
15.1
20.6
20.3
20.7
14.8
21.3
16
21
10.9
7
5.46
15.8
1.68

The ammonia wasteload allocations shown above were calculated by the WQS program by multiplying acute and chronic standards by the 2:1 acute and 50:1 chronic default ratios from guidance memo 93-015. These WLAs were entered into the WLA 40 program, output above, for calculation of limits.

Analysis of the Ome Proc in 002 effluent data for ammonia
Averaging period for standard = 30 days

~ 11 sheet
p. 104

The statistics for ammonia are:

| | | |
|-------------------------|---|-----------|
| Number of values | = | 12 |
| Quantification level | = | .2 |
| Number < quantification | = | 0 |
| Expected value | = | 64.29999 |
| Variance | = | 10350.81 |
| C.V. | = | 1.582254 |
| 97th percentile | = | 282.2704 |
| Statistics used | = | lognormal |

The WLAs for ammonia are:

| | | |
|------------------|---|-------|
| Acute WLA | = | 106 |
| Chronic WLA | = | 16.16 |
| Human Health WLA | = | ---- |

Limits are based on chronic toxicity and 2 samples/month, 1 samples/week

| | | |
|-----------------------|---|----------|
| Maximum daily limit | = | 45.96452 |
| Average weekly limit | = | 45.96452 |
| Average monthly limit | = | 37.99281 |

Note: The maximum daily limit applies to industrial dischargers
The average weekly limit applies to POTWs

The average monthly limit applies to both.

The Data are

59.4
49.3
34.7
44.8
35.3
18.5
23.8
59.4
1.59
33
75.6
162

Omega Protein proposes to install a diffuser at outfall 002. DEQ's cormix analysis of Cockrell's Creek (memo to Denise Mosca from Jan van Soestbergen dated Sept. 17, 1998) indicated a design for a diffuser which will maximize dilution. This information is being provided to Omega and a condition for documentation of diffuser design & installation prior to the limits effective date will be required. The dilution ratio of 100:1 corresponding to the "long diffuser" was used to calculate the waste-load allocations (WLAs) entered into the WLA4 program, output above.

$$WLA_a = \frac{(1.05)(1+100)}{1} = 106$$

$$WLA_c = \frac{(0.16)(1+100)}{1} = 16.16$$

Analysis of the Omega Prc in 004 effluent data for ammonia
Averaging period for standard = 30 days

Original data
p. 105

The statistics for ammonia are:

| | | |
|-------------------------|---|--|
| Number of values | = | 1 |
| Quantification level | = | .2 |
| Number < quantification | = | 0 |
| Expected value | = | 1.46 |
| Variance | = | .7673761 |
| C.V. | = | .6 |
| 97th percentile | = | 3.55279 |
| Statistics used | = | Reasonable potential assumptions - Type 2 data |

The WLAs for ammonia are:

| | | |
|------------------|---|------|
| Acute WLA | = | 2.1 |
| Chronic WLA | = | 7.9 |
| Human Health WLA | = | ---- |

Limits are based on acute toxicity and 2 samples/month, 1 samples/week

| | | |
|-----------------------|---|----------|
| Maximum daily limit | = | 2.1 |
| Average weekly limit | = | 2.1 |
| Average monthly limit | = | 1.707686 |

Note: The maximum daily limit applies to industrial dischargers
The average weekly limit applies to POTWs
The average monthly limit applies to both.

The Data are
1.46

Analysis of the Omega 005 effluent data for ammonia
Averaging period for standard = 30 days

p. 106

The statistics for ammonia are:

| | | |
|-------------------------|---|--|
| Number of values | = | 1 |
| Quantification level | = | .2 |
| Number < quantification | = | 0 |
| Expected value | = | 3.41 |
| Variance | = | 4.186116 |
| C.V. | = | .6 |
| 97th percentile | = | 8.297954 |
| Statistics used | = | Reasonable potential assumptions - Type 2 data |

The WLAs for ammonia are:

| | | |
|------------------|---|------|
| Acute WLA | = | 2.1 |
| Chronic WLA | = | 7.9 |
| Human Health WLA | = | ---- |

Limits are based on acute toxicity and 2 samples/month, 1 samples/week

| | | |
|-----------------------|---|----------|
| Maximum daily limit | = | 2.1 |
| Average weekly limit | = | 2.1 |
| Average monthly limit | = | 1.707687 |

Note: The maximum daily limit applies to industrial dischargers
The average weekly limit applies to POTWs
The average monthly limit applies to both.

The Data are
3.41

Analysis of the Omega P lein ool effluent data of cyanide
Averaging period for standard = 4 days

p. 107

The statistics for cyanide are:

| | | |
|-------------------------|---|-----------------|
| Number of values | = | 11 |
| Quantification level | = | 10 |
| Number < quantification | = | 1 |
| Expected value | = | 49.89085 |
| Variance | = | 2566.666 |
| C.V. | = | 1.015462 |
| 97th percentile | = | 177.1718 |
| Statistics used | = | delta lognormal |

The WLAs for cyanide are:

| | | |
|------------------|---|---------------|
| Acute WLA | = | 2 <i>ug/L</i> |
| Chronic WLA | = | 50 |
| Human Health WLA | = | 215000 |

Limits are based on acute toxicity and 2 samples/month, 1 samples/week

| | | |
|-----------------------|---|----------|
| Maximum daily limit | = | 2 |
| Average weekly limit | = | 2 |
| Average monthly limit | = | 1.541124 |

Note: The maximum daily limit applies to industrial dischargers
The average weekly limit applies to POTWs
The average monthly limit applies to both.

The Data are

<10 *ug/L*

10

140

120

20

40

20

50

50

30

40

Cyanide WLAs were calculated from the criteria, using the default 2:1 acute and 50:1 ratios from 93-015. These default values were calculated by the WQS program and entered into the WLA40 program, output above.

Analysis of the Omega Protein 002 effluent data for cyanide
Averaging period for standard = 4 days

p. 168

The statistics for cyanide are:

| | | |
|-------------------------|---|--|
| Number of values | = | 12 |
| Quantification level | = | 10 |
| Number < quantification | = | 7 |
| Expected value | = | 10.42671 |
| Variance | = | 39.13791 |
| C.V. | = | .6 |
| 97th percentile | = | 25.37255 |
| Statistics used | = | Reasonable potential assumptions - Type 1 data |

The WLAs for cyanide are:

| | | |
|------------------|---|--------|
| Acute WLA | = | 101 |
| Chronic WLA | = | 101 |
| Human Health WLA | = | 215000 |

NO LIMIT IS REQUIRED FOR cyanide

The Data are

<10

<10

30

20

<10

10

<10

50

20

<10

<10

<10

Omega Protein proposes to install a diffuser at outfall 002. DEQ's cornix analysis of Cockrell's Creek (memo to Denise Mosca from Jan van Soestbergen dated Sept. 17, 1998) indicated a design for a diffuser which will maximize dilution. This information is being provided to Omega and a condition for documentation of diffuser design & installation prior to the limit's effective date will be required. The dilution ratio of 100:1 corresponding to the "long diffuser" was used to calculate the waste-load allocations (WLAs) entered into the WLA40 program output above.

$$WLA_a = \frac{(1+100)(1)}{1} = 101$$

$$WLA_c = \frac{(1+100)(1)}{1} = 101$$

| | | | | | |
|---|-------------------|--------------------------|--------------------------------|-------------------|--------|
| Chesapeake Bay CB 54, STO. . f c | | | 3/94--10/96 (no more pH, temp) | 1996) | P. 109 |
| barge discharges to depth 6-8 ft. below surface, so data reflect depths 6-8 ft. | | | | | |
| On each date, data were taken for each foot of depth, up to 31 ft. For this analysis, data from 6-8 ft. were used | | | | | |
| water temperature deg C | | pH data S.U. | salinity ‰ | | |
| 28.3 | | 8.79 | 8.6 | | |
| 27.7 | | 8.77 | 8.83 | | |
| 27.5 | | 8.69 | 8.9 | | |
| 27.4 | | 8.44 | 9.69 | | |
| 27.4 | | 8.34 | 10.67 | mean | |
| 27.4 | | 8.33 | 11.98 | salinity = 16.1 ‰ | |
| 27.3 | | 8.31 | 11.37 | | |
| 27.3 | | 8.3 | 12.26 | | |
| 27.3 | | 8.25 | 12.99 | | |
| 27.2 | | 8.25 | 13.4 | | |
| 27.2 | | 8.25 | 13.62 | | |
| 27.2 | | 8.24 | 13.68 | | |
| 26.6 | | 8.24 | 11.65 | | |
| 26.6 | ← 90th percentile | 8.23 | 11.73 | | |
| 26.6 | | 8.1 | 12.04 | | |
| 25.8 | | 8.1 | 15.23 | | |
| 25.8 | | 8.1 | 15.42 | | |
| 25.7 | | 8.1 | 15.49 | | |
| 25.7 | | 8.09 | 15.46 | | |
| 25.7 | | 8.09 | 15.58 | | |
| 25.69 | | 8.03 | 15.61 | | |
| 25.66 | | 8 | 13.21 | | |
| 25.6 | | 7.99 | 13.37 | | |
| 25.6 | | 7.94 | 13.41 | | |
| 25.6 | | 7.93 | 14.94 | | |
| 25.58 | | 7.93 | 17.61 | | |
| 25.5 | | 7.92 | 18.58 | | |
| 25.5 | | 7.91 | 17.48 | | |
| 25.5 | | 7.85 | 17.85 | | |
| 25.5 | | 7.84 | 18.36 | | |
| 25.4 | | 7.81 | 17.89 | | |
| 25.4 | | 7.78 | 18.04 | | |
| 25.35 | | 7.78 | 18.19 | | |
| 25.33 | | 7.77 | 18.84 | | |
| 25.33 | | 7.77 | 18.86 | | |
| 25.31 | | 7.72 | 18.88 | | |
| 25.25 | | 7.67 | 18.69 | | |
| 25.25 | | 7.63 | 18.71 | | |
| 25.18 | | 7.63 | 18.72 | | |
| 24.4 | | 7.6 | 18.16 | | |
| 24.3 | | 7.39 | 18.25 | | |
| 24.14 | | 7.35 | 18.35 | | |
| 24.1 | | 7.35 | 16.83 | | |
| 24.1 | | | 16.91 | | |
| 24.1 | | 43 #datapoints | 16.98 | | |
| 23.2 | | 38.7 | 17.43 | | |
| 23.1 | | count 39 pts from bottom | 17.89 | | |
| 23.1 | | for 90th percentile | 18.88 | | |
| 22.9 | | | 16.57 | | |
| 22.8 | | | 16.71 | | |
| 22.7 | | | 16.96 | | |

p. 110

| | | | | | | | |
|-------|-------------|--|--|-------|---|-----|--|
| 22.7 | water temp. | | | 16 | 5 | ndy | |
| 22.5 | | | | 16.63 | | | |
| 22.5 | | | | 16.93 | | | |
| 22.1 | | | | 17.26 | | | |
| 22.1 | | | | 17.49 | | | |
| 21.5 | | | | 17.77 | | | |
| 21.4 | | | | 15.07 | | | |
| 20.4 | | | | 15.82 | | | |
| 20.4 | | | | 16.07 | | | |
| 20.4 | | | | 18.06 | | | |
| 20 | | | | 18.76 | | | |
| 19.8 | | | | 19.15 | | | |
| 19.4 | | | | 16.72 | | | |
| 19.3 | | | | 18.2 | | | |
| 19.2 | | | | 18.69 | | | |
| 19.1 | | | | 16.89 | | | |
| 19 | | | | 17.39 | | | |
| 18.9 | | | | 17.83 | | | |
| 17.94 | | | | 16 | | | |
| 17.84 | | | | 17.48 | | | |
| 17.83 | | | | 18.68 | | | |
| 17.83 | | | | 18.39 | | | |
| 17.64 | | | | 18.41 | | | |
| 17.61 | | | | 18.49 | | | |
| 17.3 | | | | 17.1 | | | |
| 17.3 | | | | 17.37 | | | |
| 17.2 | | | | 17.72 | | | |
| 16.6 | | | | 20 | | | |
| 16.3 | | | | 20.53 | | | |
| 15.9 | | | | 20.99 | | | |
| 15.61 | | | | 20.93 | | | |
| 15.6 | | | | 20.98 | | | |
| 15.6 | | | | 21.04 | | | |
| 15.55 | | | | 20.39 | | | |
| 15.5 | | | | 20.4 | | | |
| 15.45 | | | | 20.41 | | | |
| 14.9 | | | | 20.87 | | | |
| 14.9 | | | | 20.99 | | | |
| 14.8 | | | | 21.12 | | | |
| 14.5 | | | | 18.29 | | | |
| 14.4 | | | | 18.29 | | | |
| 14.4 | | | | 18.35 | | | |
| 13.4 | | | | 15.4 | | | |
| 13.3 | | | | 15.6 | | | |
| 13.2 | | | | 15.6 | | | |
| 12.4 | | | | 12.8 | | | |
| 12.3 | | | | 12.9 | | | |
| 12.3 | | | | 12.9 | | | |
| 10.9 | | | | 11.5 | | | |
| 10.9 | | | | 12 | | | |
| 10.9 | | | | 12.7 | | | |
| 9.8 | | | | 11.3 | | | |
| 9.8 | | | | 11.5 | | | |
| 9.8 | | | | 11.6 | | | |
| 8.04 | | | | 11.8 | | | |
| 8 | | | | 11.9 | | | |

| | | | | | | | |
|-------|--------------------------------|--|--|---------------|----------|--|--|
| 7.85 | water temperature | | | 12 | Salinity | | |
| 5.4 | | | | 14.3 | | | |
| 5.4 | | | | 14.5 | | | |
| 5.4 | | | | 15.9 | | | |
| 5.4 | | | | 14.8 | | | |
| 5.3 | | | | 15.2 | | | |
| 5.3 | | | | 16.1 | | | |
| 5.3 | | | | 13 | | | |
| 5.27 | | | | 13.5 | | | |
| 5.24 | | | | 14.3 | | | |
| 4 | | | | 13.4 | | | |
| 4 | | | | 14.6 | | | |
| 3.9 | | | | 15.6 | | | |
| 2 | | | | 16.9 | | | |
| 2 | | | | 17.9 | | | |
| 1.9 | | | | 18.1 | | | |
| 1.49 | | | | 14.5 | | | |
| 1.47 | | | | 15.9 | | | |
| 1.45 | | | | 15.9 | | | |
| 0.71 | | | | 16.5 | | | |
| 0.64 | | | | 16.5 | | | |
| 0.63 | | | | 16.5 | | | |
| 129 | #datapoints | | | 16.09674 | | | |
| | | | | mean salinity | | | |
| 116.1 | $[129 \cdot (90/100) =]$ | | | | | | |
| | count up 116 spaces from | | | | | | |
| | the bottom for 90th percentile | | | | | | |
| | | | | | | | |

14-20-1999

CRITERION FOR Chesapeake Bay at Omega Protein 003 VA0003867

Units = ug/l unless noted as mg/l

| PARAMETER | CRITERIA | | | QL | WLAa <i>see specific calculation following</i> | WLAC | WLAh |
|---|----------|---------|--------|------|--|----------|---------|
| | Acute | Chronic | HH | | | | |
| NH ₃ -N, mg/l | 1.69 | 0.25 | | 0.2 | 3.379156 | 12.68996 | |
| Ammonia Acute criteria is one hour average conc., Chronic criteria is 4-day average conc. | | | | | | | |
| Acenaphthene | | | 2700 | 10 | | | 135000 |
| Aldrin | 1.3 | .13 | .0014 | 0.05 | 2.6 | 6.5 | .07 |
| Anthracene | | | 110000 | 10 | | | 5500000 |
| Antimony | | | 4300 | 10 | | | 215000 |
| AS III | 69 | 36 | | 10 | 138 | 1800 | |
| Benzene | | | 710 | 10 | | | 35500 |
| Benzo(a)anthracene | | | .49 | 10 | | | 24.5 |
| Benzo(b)fluoranthene | | | .49 | 10 | | | 24.5 |
| Benzo(k)fluoranthene | | | .49 | 10 | | | 24.5 |
| Benzo(a)pyrene | | | .49 | 10 | | | 24.5 |
| Bromoform | | | 3600 | 10 | | | 180000 |
| Butyl benzyl phthalate | | | 5200 | 10 | | | 260000 |
| Cadmium | 43.00 | 9.30 | | 1 | 86 | 465 | |
| Carbon Tetrachloride | | | 45 | 10 | | | 2250 |
| Chlordane | 0.0900 | 0.0040 | 0.0059 | 0.2 | .18 | .2 | .295 |
| Chlorine Prod. Oxid | 13 | 7.5 | | 10 | NA | 375 | |
| Chlorodibromomethane | | | 57000 | 10 | | | 2850000 |
| Chloroform | | | 4700 | 10 | | | 235000 |
| 2 Chlorophenol | | | 400 | 20 | | | 20000 |
| Chlorpyrifos | .011 | .0056 | | 0.2 | .022 | .28 | |
| CR III | | | | 10 | | | |
| CR VI | 1100 | 50 | | 10 | 2200 | 2500 | |
| Chrysene | | | .49 | 10 | | | 24.5 |

| PARAMETER | CRITERIA | | | QL | WLAa | WLAc | WLAh |
|-----------------------------------|----------|---------|--------------|------|------|------|----------|
| | Acute | Chronic | HH | | | | |
| Suthion | | .01 | | | | .5 | |
| Heptachlor | .053 | .0036 | .0021 | 0.05 | .106 | .18 | .105 |
| Hexachlorocyclohexane | .16 | .01 | 25 | 0.05 | .32 | .5 | 1250 |
| Hydrogen Sulfide | | 2 | | | | 100 | |
| Indeno(1,2,3cd)pyrene | | | .49 | 20 | | | 24.5 |
| Isophorone | | | 490000 | 10 | | | 2.45E+07 |
| Kepon | | 0 | | | | 0 | |
| Lead | 240.000 | 9.300 | | 5 | 480 | 465 | |
| Malathion | | .1 | | | | 5 | |
| Mercury | 2.1 | .025 | .053 | 0.2 | 4.2 | 1.25 | 2.65 |
| Methoxychlor | | .03 | | 0.2 | | 1.5 | |
| Mirex | | 0 | | | | 0 | |
| Monchlorobenzene | | | 21000 | 50 | | | 1050000 |
| Nickel | 75.000 | 8.300 | 4600 | 40 | 150 | 415 | 230000 |
| Nitrobenzene | | | 1900 | 10 | | | 95000 |
| PCB (check isomer**) | | .03 | .00045 | 1 | | 1.5 | .0225 |
| Pentachlorophenol | 13.000 | 7.900 | 82 | 50 | 26 | 395 | 4100 |
| Phenol | | | 4600000 | 10 | | | 2.3E+08 |
| Phosphorus (el.) | | .1 | | | | 5 | |
| Pyrene | | | 11000 | 10 | | | 550000 |
| Radionuclides: | | | | | | | |
| Gross Alpha Particle | | | 15 pCi/l | | | | |
| Beta Particle and Photon Activity | | | 4 mrem | | | | |
| Strontium-90 | | | 8 pCi/l | | | | |
| Tritium | | | 20,000 pCi/l | | | | |

11/14

| PARAMETER | CRITERIA | | | QL | WLAa | WLAc | WLAh |
|-------------------------|----------|---------|--------|----|------|------|--------|
| | Acute | Chronic | HH | | | | |
| Selenium | 300 | 71 | 11000 | 5 | 600 | 3550 | 550000 |
| Silver | 2.300 | | | 2 | 4.6 | | |
| Tetrachloroethylene | | | 3500 | 10 | | | 175000 |
| Toluene | | | 200000 | 10 | | | 1E+07 |
| Toxaphene | .21 | .0002 | .0075 | 5 | .42 | .01 | .375 |
| 1,2,4, Trichlorobenzene | | | 950 | 10 | | | 47500 |
| Trichlorethylene | | | 810 | 10 | | | 40500 |
| 2,4,6-Trichlorophenol | | | 65 | 10 | | | 3250 |
| Tributyltin | .36 | .001 | | | NA | .05 | |
| Vinyl Chloride | | | 5300 | 10 | | | 265000 |
| Zinc | 95.000 | 86.000 | | 20 | 190 | 4300 | |

Criterion also applicable for D.O., pH, Temp. and Dioxin

All metals shall be measured as dissolved. For Cadmium, Chromium III, Copper, Lead, Nickel, Silver and Zinc, multiply number by water effect ratio (WER), as defined in 9 VAC 25-260-140.F.

Chronic aquatic life criteria applies to methyl mercury. This criteria will protect the marketability of natural resources, e.g. fish and shellfish.

* Endosulfan I-0.014, Endosulfan II-0.004, Endosulfan Sulfate-0.066

** PCB 1242, 1254, 1221, 1232, 1248, 1260 or 1016 (only 1242 has a detection level)

If background data are available correct the WLA by subtracting the product of background concentration and the appropriate factor (Q7/QE, Q1/QE, Q30/QE, QH/QE, 0, 1 or 49)

If receiving waters are transitional, run fresh and salt and use most stringent

INPUT INFORMATION:

PWS = n Lake, marsh or swamp = n
 90th percentile Temperature = 26.6
 Salinity= 16.1

Receiving stream is Chesapeake Bay - salt water

Contaminated stormwater = n
 90th percentile pH = 8.34

P.115

To: Denise M. Mosca@KLMCK@DEQ
Cc:
Bcc:
From: Maynard D. Phillips@WPS@DEQ
Subject:
Date: Monday, August 17, 1998 8:42:47 EDT
Attach:
Certify: N
Forwarded by:

Denise:

I have read again the mixing report for the AMPRO barge discharge into the oay and believe that the 28:1 mixing is appropriate. The situation is:

The discharge is on a daily basis
The discharge duration is 1 to 3 hours
It is unlikely that the location is exactly the same for each day

In this situation, conventional 48 to 96 hour toxicity testing would be extremely conservative and I see no reason why the 28:1 should not be used. This can be easily attained according to the table on page 2 of Kenneth Court's analysis. I would suggest that the permit be written with conditions along the following lines:

The barge discharge shall be accomplished according to the following restrictions:

| pump rate | Barge Speed |
|-----------|-------------|
| 1000 gpm | > 2 kn |
| 1500 gpm | > 3 kn |
| 2000 gpm | > 4 kn |

Pumping rates shall not exceed 2000 gpm under any conditions.

Note: the pump limit is based on the consideration that the tug is unlikely to be able to move the barge faster than about 4 kn.

I talked to John Barnes and advised him that I was writting you this note and that I saw no problem with maintaining the barge discharge as a outfall in the permit.

Will talk to John S. today to see what is the problem with the mixing model.

Dale.

*Note: Omega now retains ownership of the Ampro barge.
Outfall 003 has not been used in over 15 years, however
Omega wishes to retain the outfall in case of emergency.*

Analysis of the Omega 003 fluent data for amm^c a
Averaging period for standard = 30 days

p. 117

The statistics for ammonia are:

| | | |
|-------------------------|---|-----------|
| Number of values | = | 11 |
| Quantification level | = | .2 |
| Number < quantification | = | 0 |
| Expected value | = | 172.7587 |
| Variance | = | 13083.21 |
| C.V. | = | .6620903 |
| 97th percentile | = | 447.7457 |
| Statistics used | = | lognormal |

The WLAs for ammonia are:

| | | |
|------------------|---|-------|
| Acute WLA | = | 49.01 |
| Chronic WLA | = | ---- |
| Human Health WLA | = | ---- |

Limits are based on acute toxicity and 2 samples/month, 1 samples/week

| | | |
|-----------------------|---|----------|
| Maximum daily limit | = | 49.01 |
| Average weekly limit | = | 49.01 |
| Average monthly limit | = | 39.56628 |

Note: The maximum daily limit applies to industrial dischargers
The average weekly limit applies to POTWs

The average monthly limit applies to both.

The Data are

420 mg/L
202
95
235
252
207
132
87
109
70
64

In accordance with Dale Phillips' note to Denise Morca dated August 17, 1998, a dilution ratio of 28:1 is appropriate in conjunction with the addition of a special condition specifying the barge pump rate and speed. The special condition has been added to this modified permit, and the dilution ratio was used to calculate a WLA from the ^{acute} criterion for ammonia. Acute toxicity alone was considered as the discharge duration is 1-3 hr only.

$$WLA_a = \frac{(1.69)(1 \times 28)}{1} = 49.01$$

NPDES PERMIT PROGRAM

Fact SheetOmega Fact Sheet
P. 118

1. Facility name and address:
- Zapata Haynie Corp.
P. O. Box 175
Reedville, VA 22539
- Location:
State Road 659
Reedville, VA 22539
2. Permit No.: VA0003867
First issue date: January 24, 1975
Expiration date: January 24, 1985
3. Owner contact: William P. Poluk
General Manager
Phone No. 804-453-4211
4. Permit drafted by: J. K. Cunningham Date: 8/29/84
5. Headquarters: _____ Date: _____
Waived ☐ Non-waived ☒
Date to EPA: 9/12/84 Date returned by EPA: _____
Comments received from EPA: Yes ☐ No ☒
6. Category: Menhaden Reduction Plant SIC Code(s) 2077
7. Number of Outfalls: 001 - Air scrubber wastewater discharged into Cockrell Creek.
002 - Treated condensate from two-cell lagoon system discharged into Cockrell Creek.
003 - Condensate barged to Chesapeake Bay; this discharge will occur only during emergencies or peak production periods.
004 - Non-contact cooling water from Evaporator System discharged into Cockrell Creek.
8. Description of Discharge:
- | | |
|----------------|---------------------------|
| (X) Major | (X) Renewal |
| (X) Industrial | (X) Effluent Limited |
| (X) Existing | (X) Water Quality Limited |
9. Description of the Discharge - See attached sheet - Table 2.

process stickwater and bailwater. The discharge results from processing of menhaden into fishmeal, oil and solubles.

Omega Fact Sheet
P.119

11. Wastewater Treatment Facilities:
Evaporator - concentrates stickwater and bailwater into fish solubles.
Lagoon System - will treat all condensate from evaporator system.

12. Location of Discharges: See attached sheets.

| <u>Outfall 001, 002, 004</u> | | <u>Outfall 003</u> |
|------------------------------|--|--|
| Receiving Stream: | Cockrell Creek | Chesapeake Bay |
| Basin: | Chesapeake Bay, Atlantic Ocean & Small Coastal Basin | Chesapeake Bay, Atlantic Ocean & Small Coastal Basin |
| Section: | 2 | 2 |
| Class: | II | II |
| Special Standard: | a | a |

Applicable State Water Quality Standards:

| | | |
|-------------|------------------------|------------------------|
| pH | 6.0 - 8.5 | 6.0 - 8.5 |
| D.O. | 5.0 mg/l avg. | 5.0 mg/l avg. |
| Temperature | 3°C rise above natural | 3°C rise above natural |
| Bacteria | 14/100 ml-MPN (Median) | 14/100 ml-MPN (Median) |

13. Section 301(b)(1)A of the Clean Water Act requires that point sources other than a POTW achieve effluent limitations based on the application of Best Conventional Technology (BCT) of conventional pollutants. The combined discharges from outfalls 001, 002, and 003 must meet BCT effluent limitations.

Section 302(a) of the Act requires that effluent limitations for point sources shall be established which are necessary to meet water quality standards. Since Cockrell Creek is a water quality limiting stream, the discharges from outfalls 001 and 002 must also meet water quality limits as determined by the mathematical model of Cockrell Creek. Outfall 004 discharges non-contact cooling water.

14. Effluent Limitations: Effluent limits for Cockrell Creek are based on a mathematical water quality study as developed by the Virginia Institute of Marine Science. This two-layer mathematical model of Cockrell Creek shows that the lower layer appears to be controlled by bottom benthic demand and not affected by the point source loadings. An average of 2,268 kg/day of carbonaceous BOD₅ will maintain an average of 5.0 mg/l dissolved oxygen in the upper layer of Cockrell Creek. 45.4 kg/day of that total will be reserved for the Reedville Sanitary District sewage treatment plant to allow for future growth, leaving the two menhaden plants with 2222.6 kg/day. Average Total Suspended Solids and average Oil and Grease are reduced by the same percentage as the BOD₅ loading was reduced by the model. Maximum values for BOD₅, and Oil and Grease are based on the same factor as found in the Federal Register for these parameters.

The BOD₅ effluent limitation for outfall 001 is net based. The intake water for outfall 001 is taken from the same body of water into which the discharge is made (Cockrell Creek). Because the discharge from outfall 001 is the result of wastewater from the air scrubber system, the pollutants present in the intake water will not be removed through the system.

standards are being met. The mathematical model was run with a continuous BOD₅ loading at steady state conditions, meeting an average of 5.0 mg/l dissolved oxygen in the upper layer of the creek. Under these conditions, the model segment of the creek in which the intake and discharge points are located contains an average BOD₅ of 2.9 mg/l. This background concentration will be subtracted from the BOD₅ effluent concentration for outfall 001 to calculate the net based limitation. This information meets the criteria contained in 40 CFR, Section 122.63 (h) for granting a net limitation.

Omega
Fact
Sheet
p.120

Effluent limitations for the Cockrell Creek discharges and the BCT limitations which include the Bay discharge are contained in Table I.

15. Monitoring: Because of the size of the discharge the plant is required to monitor BOD₅ and TSS with a 24-hour composite sample every day of operation. Oil and Grease is monitored once per week with a grab sample. Because the Oil & Grease discharge is well below effluent limitations, the monitoring frequency is adequate.
16. Schedule of Compliance: Not applicable.
17. Special Conditions: See attached sheet.
18. Additional Information: The application, proposed permit, comments received, and other information are on file and may be inspected and copied at:

State Water Control Board
Tidewater Regional Office
Division of Special Projects
Church Street
P. O. Box 669
Kilmarnock, VA 22482 (Tel: 804-435-3181)

Name of person to contact: G. T. Yagel, during the hours of 8:15 a.m. and 5:00 p.m. on business days.

Any person may comment in writing to the Board on the proposed permit no later than . All comments received within the 30-day period will be considered in the formulation of final determinations regarding the application. All comments should include the name, address and telephone number of the writer and a concise statement of the factual basis for the comments.

(X) Final Limitation

Effective Dates: From

() Interim Limitation

(INDUSTRIAL)

OUTFALL 001, 002

| Parameter | BASIS | | | | | | BASED ON | | | Permit Limit |
|------------------|---------------------------|---------------------------|----------------------------|----------------------------------|-----------------------------|------------|------------|--------|--------|---------------------------------|
| | Effluent Guidelines | | | Best Profes. Judg- ment | Water * Quality Stds. | Multiplier | Production | kg/day | | |
| | BPT (Prop) (Promul) | BAT (Prop) (Promul) | NSPS (Prop) (Promul) | | | | | | | |
| | | | | BCT | BPT | BAT | | | | |
| BOD ₅ | | | | | | | 5 | | 2223 E | AVG. 1356 867 MAX. 2427 1552 |
| TSS | | | | | | | 5 | | | AVG. 504 322 MAX. 1239 792 |
| Oil & Grease | | | | | | | 5 | | | AVG. 244 156 MAX. 449 287 |
| pH | | | | | | | | | | 6.0 ± 8.5 |
| Flow | | | | | | | | | | |

- *1. Per 208 Plan and date _____
2. Per 303(c) Plan and date _____
3. Per EPA and date _____
4. Per 401 Certification and date _____
5. Other Mathematical water quality study of Cockrell Creek.
6. Include toxic chart from previous rationale document (Separate Sheet)

Cockrell Creek
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(X) Final Limitation

Effective Dates: From

() Interim Limitation

(INDUSTRIAL)

To

OUTFALL 001, 002, 003

| Parameter | BASIS | | | | | | BASED ON | | | In | |
|------------------|---------------------------|---------------------------|----------------------------|----------------------------------|-----------------------------|------------|------------|----------------------|-----------|----------------|--|
| | Effluent Guidelines | | | Best Profes. Judg- ment | Water * Quality Stds. | Multiplier | Production | Permit Limit | | | |
| | BCT (Prop) (Promul) | BAT (Prop) (Promul) | NSPS (Prop) (Promul) | | | | | | | | |
| | BCT Promul. | | | BCT | BPT | BAT | | kg/kkg | kg | kg/day | |
| BOD ₅ | X | | | | | | | AVG. 3.9 MAX. 7.0 | 1,539,534 | 6004 10,777 | |
| TSS | X | | | | | | | AVG. 1.5 MAX. 3.7 | | 2309 5696 | |
| Oil & Grease | X | | | | | | | AVG. .76 MAX. 1.4 | | 1170 2155 | |
| pH | X | | | | | | | | | | |
| Flow | | | | | | | | | | | |

- *1. Per 208 Plan and date _____
- 2. Per 303(c) Plan and date _____
- 3. Per EPA and date _____
- 4. Per 401 Certification and date _____
- 5. Other _____
- 6. Include toxic chart from previous rationale document (Separate Sheet)

Omega Fact Sheet
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(INDUSTRIAL)

Tc

1/Day
1/Day

- Comega Fact Sheet
p. 123

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4900 Cox Road

Glen Allen, VA 23060

804/527-5020

SUBJECT: AMPRO Fisheries Company

TO: Technical File via Denise Mosca

FROM: Steven G. Stell

DATE: August 2, 1995

COPIES: J.R. Bell, Ray Jenkins, Mason Harper

DMM
(by FAX 8-3-95)RECEIVED
AUG 07 1995

We all met on August 1, 1995 to discuss the desired sampling locations for the monitoring being conducted on the barge (discharge 003 and Chesapeake Bay Monitoring). The company currently collects samples for Discharge Monitoring Report (DMR) reporting purposes and to supply additional data submitted with the DMR.

We decided that appropriate sampling locations were as follows:

DMR Reporting - Discharge 003

| <u>Parameter</u> | <u>Location</u> | <u>Sample Type</u> |
|---------------------------------|---------------------------------|-----------------------------|
| BOD ₅ , TSS, Ammonia | Auto sampler entering Bay barge | 24 HC |
| Oil & Grease | Wastewater entering Bay barge | Grab |
| D.O., Temp. | 'Blend' at discharge spigot | <u>in situ</u> ¹ |
| pH | 'Blend' at discharge spigot | Grab |
| Bioassay/Toxicity | 'Blend' at discharge spigot | Grab |

The above data will be used to report values on the DMR for Discharge 003 and used to determine the Summary Discharge 999 DMR values.

Chesapeake Bay Water Quality Monitoring - "Pre-Discharge"

| <u>Parameter</u> | <u>Location</u> | <u>Sample Type</u> |
|----------------------------|-------------------------|-----------------------------|
| BOD ₅ , Ammonia | Off stern, 10 ft. depth | Grab |
| D.O., Temp. | Off stern, 10 ft. depth | <u>in situ</u> ¹ |
| pH | Off stern, 10 ft. depth | Grab |

Chesapeake Bay Water Quality Monitoring - "After Discharge"

| <u>Parameter</u> | <u>Location</u> | <u>Sample Type</u> |
|----------------------------|--------------------------|-------------------------------|
| BOD ₅ , Ammonia | 'Blend' discharge spigot | Grab |
| D.O., Temp. | 'Blend' discharge spigot | <u>in situ</u> ^{1,2} |
| pH | 'Blend' discharge spigot | Grab ² |

The Chesapeake Bay Water Quality Monitoring data is submitted with the DMR.

¹ D.O. and temperature readings should be obtained in situ (in place).

² D.O., temperature and pH samples taken for Discharge 003 reporting purposes may be used for this reporting.

1sgs Note:
This page is included for information concerning the barge discharge. Omega Protein now retains ownership of the AMPRO barge.

SUBJECT: Menhaden Industries Permit Reissuance - Cockrell Creek Wasteload Allocation - Northumberland County

TO: File - Kilmarnock Office

FROM: G. T. Yagel

DATE: August 15, 1979

COPIES: L. S. McBride, L. G. Lawson, A. J. Anthony, J. R. Bell, F. K. Cunningham
Dale F. Jones, Burton R. Tuxford

In anticipation of this division's responsibilities for the reissuance of permits for two menhaden industries in Northumberland County, the issue of wasteload allocation for CBOD₅ has been under consideration for more than a year. The deadline date for the reissuance is January 1980. No attempt will be made to include in this memorandum a summary of all of the items brought forth in many conferences with VIMS, the permittee consultants, and other staff members. That information can be found in our regional office file. The purpose of this memorandum is to set forth conclusions reached during a conference with personnel of BAT, BWCM, BE, and TRO-DSP on August 7, 1979 at 10:30 a.m. Personnel involved are listed below:

| | |
|-------------------|-----------|
| A. J. Anthony | - BAT |
| J. R. Bell | - BAT |
| Dale F. Jones | - BWCM |
| Burton R. Tuxford | - BWCM |
| Anne Field | - BE |
| G. T. Yagel | - TRO-DSP |

1. VIMS model of Cockrell Creek has been verified and will be utilized as the basis for wasteload allocation of the total loading from these menhaden industries during the drafting of limitations for reissued permits.
2. In accordance with the VIMS model, 5,000 pounds per day of carbonaceous BOD is the total limit allowable for all discharges into Cockrell Creek in order that 5.0 m/l of DO will be maintained in the upper layer of that receiving stream. 100 pounds per day of that total will be reserved for the Reedville Sanitary District sewage treatment facilities in order that growth may be allowed, leaving the industries with 4,900 pounds per day.
3. The 4,900 pounds total loading is considered a daily average and not a daily maximum.
4. The upper layer of Cockrell Creek, as identified in the VIMS model BWCM.

File - Kilmarnock Office
Cockrell Creek Wastload Allocation
Page 2
August 15, 1979

5. Suspended Solids loading will be reduced in the reissued permits by the same proportion as the CBOD₅.
6. Net loading methodology used in the past for calculating daily loading from each industry will be deleted.
7. Alteration of the water quality standards now applicable to Cockrell Creek can only be accomplished in accordance with Section 35.1550 appearing in the Federal Register/Volume 44 No.101/Wednesday, May 23, 1979. It was Anne Field's opinion that relaxation of existing standards could be accomplished only if economic data, provided by each industry, demonstrated that compliance with wasteload allocations planned would necessitate termination of the operations of these industries.
8. After considering all alternatives for allocation methodology, it was decided that productivity capability of each industry would be used as the basis for determining the percentage of allowable loading of waste to be allocated to each industry during the drafting of permit limits for permit reissuance. TRO-DSP personnel will confer with the management of each industry on August 20, 1979 for the purpose of explaining the allocation methodology agreed upon in securing production capacity data.
9. In response to F. K. Cunningham and G. T. Yagel's memorandum to Dale Jones, dated August 6, 1979, comments from Dale Phillips regarding the approach planned for wasteload allocation and the use of the VIMS model are expected prior to August 20, 1979.

The writer is anticipating that at least one of these industries may be requesting a hearing before the Board after they receive notice of the allocation offered them, for the purpose of contesting our decision in accordance with the provisions of Regulation #6 and the current NPDES Permit Issuance Manual. During that hearing, economic data may be provided by each or both of these industries. That data probably should include dollar value of the final product exported from each of these plants to their markets, other socio-economic factors, which only the industries can provide, number of employees affected by possible termination of production, and production data for the 1973-1974 seasons as compared to that data available for the 1977-1978 production seasons.

/bj

original sent
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HYDROGRAPHY AND HYDRODYNAMICS
OF VIRGINIA ESTUARIES

IX. Mathematical Water Quality Study of Great
Wicomico River and Cockrell Creek

by

P. V. Hyer
J. Jacobson

PREPARED UNDER

THE COOPERATIVE STATE AGENCIES PROGRAM

OF

THE VIRGINIA STATE WATER CONTROL BOARD AND
THE VIRGINIA INSTITUTE OF MARINE SCIENCE

Project Officers

Dale Jones
Michael Bellanca

Virginia State Water Control Board

Special Report No. 120
in Applied Marine Science and
Ocean Engineering

Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

William J. Hargis, Jr.
Director

September 1976

III. Description of Study Area

The drainage area of the Great Wicomico River takes in a portion of Northumberland County (see figure 1). This region is rural, with about half the land area covered by forest. Farming, commercial fishing and fish processing are the financial mainstays for the area.

Mean daily minimum temperatures are approximately thirty degrees and sixty-nine degrees Fahrenheit (minus one and twenty-one degrees Celsius) for January and July, respectively. The corresponding mean daily maximum temperatures are forty-eight degrees and eighty-eight degrees Fahrenheit respectively (nine and thirty-one degrees Celsius). Precipitation in the drainage basin exceeds forty-six inches (117 cm) per year. Autumn is drier than the rest of the year. Precipitation in the summer tends to occur as brief, heavy thundershowers, rather than as the more prolonged storms that occur throughout the rest of the year.

The Great Wicomico River empties directly into Chesapeake Bay. The land area of the drainage basin is only 70.6 square miles (182.8 km^2), resulting in relatively little freshwater inflow to the river. Tidal action is also weak, with the tidal current amplitude being on the order of 0.5 ft/sec (15 cm/sec) or less. Since the stream is short, there is very little time lag in the upstream propagation of the tidal wave.

Cockrell Creek is a tributary to the Great Wicomico. The creek empties into the river close to the river mouth. The creek has characteristics similar to the river; small drainage area (4.6 square miles, or 11.9 km²) weak tidal action and low freshwater input. Two fish processing plants as well as the town of Reedville are located on Cockrell Creek. During the summer, the two plants introduce a total of about 5000 lb/day (2300 kg/day) of five-day carbonaceous BOD and about 900 lb/day (410 kg/day) of organic nitrogen and ammonia (as N).

§ 408.143 [Reserved]

§ 408.144 Pretreatment standards for existing sources.

The pretreatment standards under section 307(b) of the Act for a source within the tuna processing subcategory which is a user of a publicly owned treatment works and a major contributing industry as defined in 40 CFR Part 128 (and which would be an existing point source subject to section 301 of the Act, if it were to discharge pollutants to the navigable waters), shall be the standard set forth in 40 CFR Part 128, except that, for the purpose of this section, 40 CFR 128.121, 128.122, 128.132, and 128.133 shall not apply. The following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties controlled by this section which may be discharged to a publicly owned treatment works by a point source subject to the provisions of this subpart.

| Pollutant or pollutant property | Pretreatment standard |
|---------------------------------|-----------------------|
| pH..... | No limitation. |
| BOD ₅ | Do. |
| Oil and grease..... | Do. |

§ 408.145 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a new source subject to the provisions of this subpart:

| Effluent characteristic | Effluent limitations | |
|-------------------------|--|---|
| | Maximum for any 1 day | Average of daily values for 30 consecutive days shall not exceed— |
| | Metric units (kg/kg of seafood) | |
| BOD ₅ | 20 | 8.1 |
| TSS..... | 7.5 | 3.0 |
| Oil and grease..... | 1.9 | 0.76 |
| pH..... | (1) | (1) |
| | English units (lb/1,000 lb of seafood) | |
| BOD ₅ | 20 | 8.1 |
| TSS..... | 7.5 | 3.0 |
| Oil and grease..... | 1.9 | 0.76 |
| pH..... | (1) | (1) |

(1) Within the range 6.0 to 9.0.

§ 408.146 Pretreatment standards for new sources.

The pretreatment standards for incompatible pollutants under section 307(c) of the Act for a source within the tuna processing subcategory, which is a user of a publicly owned treatment works (and which would be a new source subject to section 306 of the Act if it were to discharge pollutants to the navigable waters), shall be the standard set forth in 40 CFR Part 128, except for § 128.133. Subject to the provisions of 40 CFR Part 128, process waste waters from a new source subject to the provisions of this subpart may be introduced into a publicly owned treatment works.

§ 408.147 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Except as provided in §§ 125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in § 401.16 in § 408.142 of this subpart for the best practicable control technology currently available (BPT).

[408.147 added by 51 FR 24996, July 9, 1986]

Subpart O—Fish Meal Processing Subcategory

§ 408.150 Applicability; description of the fish meal processing subcategory.

The provisions of this subpart are applicable to discharges resulting from the processing of menhaden on the Gulf and Atlantic Coasts and the processing of anchovy on the West Coast into fish meal, oil and solubles.

§ 408.151 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in Part 401 of this chapter shall apply to this subpart.

(b) The term "seafood" shall mean the raw material, including freshwater and saltwater fish and shellfish, to be processed, in the form in which it received at the processing plant.

§ 408.152 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

(a) In establishing the limitation set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. A individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharge are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(b) The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be

[Sec. 408.152(b)]

discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) Any menhaden or anchovy fish meal reduction facility which utilizes a solubles plant to process stick water or ball water shall meet the following limitations.

| Effluent characteristic | Effluent limitations | |
|-------------------------|--|---|
| | Maximum for any 1 day | Average of daily values for 30 consecutive days shall not exceed— |
| | Metric units (kilograms per 1,000 kg of seafood) | |
| BOD ₅ | 7.0 | 3.9 |
| TSS | 3.7 | 1.5 |
| Oil and grease | 1.4 | 0.76 |
| pH | (¹) | (¹) |
| | English units (pounds per 1,000 lb of seafood) | |
| BOD ₅ | 7.0 | 3.9 |
| TSS | 3.7 | 1.5 |
| Oil and grease | 1.4 | 0.76 |
| pH | (¹) | (¹) |

¹ Within the range 6.0 to 9.0.

(2) Any menhaden or anchovy fish meal reduction facility not covered under § 408.152(b)(1) shall meet the following limitations:

| Effluent characteristic | Effluent limitations | |
|-------------------------|--|---|
| | Maximum for any 1 day | Average of daily values for 30 consecutive days shall not exceed— |
| | Metric units (kg/kg of seafood) | |
| BOD ₅ | 3.5 | 2.8 |
| TSS | 2.6 | 1.7 |
| Oil and grease | 3.2 | 1.4 |
| pH | (¹) | (¹) |
| | English units (lb/1,000 lb of seafood) | |
| BOD ₅ | 3.5 | 2.8 |
| TSS | 2.6 | 1.7 |
| Oil and grease | 3.2 | 1.4 |
| pH | (¹) | (¹) |

¹ Within the range 6.0 to 9.0.

within the fish meal processing subcategory which is a user of a publicly owned treatment works and a major contributing industry as defined in Part 128 of this chapter (and which would be an existing point source subject to section 301 of the Act, if it were to discharge pollutants to the navigable waters), shall be the standard set forth in Part 128 of this chapter except that, for the purpose of this section, §§ 128.121, 128.122, 128.132 and 128.133 of this chapter shall not apply. The following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties controlled by this section which may be discharged to a publicly owned treatment works by a point source subject to the provisions of this subpart.

| Pollutant or pollutant property | Pretreatment standard |
|---------------------------------|-----------------------|
| BOD ₅ | No limitation. |
| TSS | Do. |
| pH | Do. |
| Oil and grease | Do. |

§ 408.155 Standards of performance for new sources.

The following standards of performance establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a new source subject to the provisions of this subpart:

| Effluent characteristic | Effluent limitations | |
|-------------------------|--|---|
| | Maximum for any 1 day | Average of daily values for 30 consecutive days shall not exceed— |
| | Metric units (kilograms per 1,000 kg of seafood) | |
| BOD ₅ | 6.7 | 3.8 |
| TSS | 3.7 | 1.5 |
| Oil and grease | 1.4 | 0.76 |
| pH | (¹) | (¹) |
| | English units (pounds per 1,000 lb of seafood) | |
| BOD ₅ | 6.7 | 3.8 |
| TSS | 3.7 | 1.5 |
| Oil and grease | 1.4 | 0.76 |
| pH | (¹) | (¹) |

¹ Within the range 6.0 to 9.0.

§ 408.153 [Reserved]

§ 408.154 Pretreatment standards for existing sources.

The pretreatment standard under section 307(b) of the Act for a source

§ 408.156 Pretreatment standards for new sources.

The pretreatment standard under section 307(c) of the Act for a new

source within the fish meal processing subcategory which is a user of a publicly owned treatment works and a major contributing industry as defined in Part 128 of this chapter (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the same standard as set forth in Part 128 of this chapter, for existing sources, except that, for the purpose of this section, §§ 128.121, 128.122, 128.132 and 128.133 of this chapter shall not apply. The following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties controlled by this section which may be discharged to a publicly owned treatment works by a new source subject to the provisions of this subpart:

| Pollutant or pollutant property | Pretreatment standard |
|---------------------------------|-----------------------|
| BOD ₅ | No limitation. |
| TSS | Do. |
| pH | Do. |
| Oil and grease | Do. |

§ 408.157 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).

Except as provided in §§ 125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in § 401.16 in § 408.152 of this subpart for the best practicable control technology currently available (BPT).

[408.157 added by 51 FR 24996, July 9, 1986]

Subpart P—Alaskan Hand-Butchered Salmon Processing Subcategory

§ 408.160 Applicability; description of the Alaskan hand-butchered salmon processing subcategory.

The provisions of this subpart are applicable to discharges resulting from the hand-butchered of salmon in Alaska.

[Sec. 408.160]

TRANSACTION REPORT

Transmission
Transaction(s) completed

| NO. | TX DATE/TIME | DESTINATION | DURATION | PGS. | RESULT | MODE |
|-----|--------------|-------------|------------|------|--------|-------|
| 443 | MAY. 7 16:30 | 8044534475 | 0' 03' 17" | 010 | OK | N ECM |



VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

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P. O. BOX 669
KILMARNOCK, VA 22482
(804) 435-3181

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FROM: Denise Mosca

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COMMENTS: when I sent you your copy of the draft

permit I forgot to put this with it - these are

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